SPECULATIVE GRAMMAR, UNIVERSAL GRAMMAR AND PHILOSOPHICAL ANALYSIS OF LANGUAGE

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Dino Buzzetti and Maurizio Ferriani (eds.)

*Speculative Grammar, Universal Grammar and
Philosophical Analysis of Language*

SPECULATIVE GRAMMAR, UNIVERSAL GRAMMAR AND PHILOSOPHICAL ANALYSIS OF LANGUAGE

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PREFACE

The present volume is the outcome of a seminar on «Speculative Grammar, Universal Grammar, and Philosophical Analysis» held at the University of Bologna, Department of Philosophy, in 1984. The seminar was planned by a research group consisting of Dino Buzzetti, Maurizio Ferriani, Eva Picardi and Giorgio Sandri, all members of the University of Bologna, and of Mirella Capozzi and Massimo Mugnai, respectively members of the University of Siena and the University of Florence.

The research aimed at considering various aspects of the interplay between linguistic theories on the one hand, and theories of meaning and logic on the other. The point of view was mainly historical, but a theoretical approach was also considered relevant. Theories of grammar and related topics were taken as a focal point of interest; their interaction with philosophical reflections on language was examined in a series of lectures, given both by linguists and philosophers. Each lecture was about particular problems somehow connected with the main theme and each one dealt with different authors and periods, ranging from the Middle Ages to the present day. The resulting picture is understandably very selective and cannot be in any way exhaustive; nevertheless, some unifying patterns can be perceived among the various themes under discussion.

The survey is not confined, however, to a reflection on the most well-known aspects or the most important period of speculative, philosophical or universal grammars in the history of Western thought. Thus, the contribution of speculative grammarians is here related to that of medieval philosophers concerned with quidditative discourse (i.e. related to the essence of things) as expressed especially by definition, while the analysis of the syntactic, semantic and pragmatic aspects of Leibniz's *characteristica universalis* helps in an examination of the relation between signs and concepts. Thus, alongside the specific traits of XVIIth and XVIIIth century grammars most commonly considered, less fre-

quently examined aspects emerge: the impact of the evolution of word classes during the phase of the gradual formation of Enlightenment linguistic theories; the space assigned to the study of language factors by the *Encyclopédie*; the supremacy finally assigned to the French language or to the «situation language» as symptoms of the decline of that phase.

A central topic in this volume concerns the recurring polemic of certain logicians and philosophers towards traditional grammatical categories as having a misleading influence with regard to the possibility of establishing a universal grammar or a logic not conditioned by the structure of natural languages. Thus, for Kant, grammar is not *a priori*, since it cannot avoid lexical considerations, whereas logic is; Peirce draws inspiration from medieval speculative grammar to establish the semiotic, linguistic and logical categories indispensable to the construction of a universal grammar; Frege believes psychology to exercise a distorting influence through grammar, preventing a correct access to linguistic meaning. But even this topic is, from a certain point of view, reconsidered. From the essays presented here, it may be seen that: the strong links that Kant acknowledged to exist between thought and language imposed upon him the problem of the objective reference of words/concepts; Peirce does not neglect certain textbooks of historical and comparative linguistics; and Frege probably owes something to some logical and linguistic doctrines of the much blamed psychologists.

Moreover, the essays presented here do not fail to consider current discussions about problems emerging at the borderline between philosophical, logical and linguistic interest. Thus Husserl's philosophy of language is seen here as lying at the origin both of a grammatical theory (which has recently been further developed) based on a theory of dependence relations between parts of sentences, and of a view of meaning based on an analysis of features of certain mental acts and of their relationship with different uses of language. Finally, a comparison is also made between strategies applied in recent formal grammars to accommodate cases of divergence between syntactic and semantic properties connected with the very rich lexical apparatus of natural language, with specific regard to the role of meaning postulates in classical Montague Grammar.

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Dino Buzzetti
Maurizio Ferriani

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THE GRAMMAR OF QUIDDITY

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§ 1 *Applied Logical Grammar.*

This paper is constructed from the point of view of a practitioner, i.e. one who applies logical grammar for the purpose of understanding and verifying (or showing to be false, as the case may be) medieval metaphysical and logical theorems. For these purposes I take over certain notions of logical grammar (§ 3 below), and although I would hope to be able to elucidate those notions, if called upon to do so, nevertheless such elucidation is not the central point of the present exercise. At the same time, however, the acceptability of that exercise of clarification will be considered an indication that my conjectures as to the appropriateness of the grammar and its presuppositions are artistically valid (Lejewski 1975: 144; cf. Henry 1984a, § 1.2, § 1.3). Here the medieval problems are being used as what engineers call a 'test-bed'. It does not suffice to give a speculative description of a new type of engine: it needs a test run in the concrete. So also with the logical grammar. It is a fine and exhilarating exercise to formulate projects for such grammar, but their real test comes in prolonged, sustained, practical application to a variety of concrete problems, and not just to one or two standard stuffed examples. And although the grammar that I use happens to have medieval features which tend to ensure the appropriateness and sympathy of the analyses of medieval themes, nevertheless this does not bar it from use in contemporary areas as well.

I take 'quiddity' as my theme because it seems to me that the writings of medieval philosophers who are neither nominalists nor Platonists, and who yet claim to be able to refer to reality when dealing with the essence, form, what-ness, or quiddity of things, raise certain problems. The nominalists, with their negative thesis concerning quiddities, have no difficulty in making clear their intent. The Platonists, likewise, appear to be easily understood. The difficulty comes when one tries to

assess the status of talk about quiddity in what one may call the 'Aristo-telian' mode. How can it escape nominalism when it denies real univer-sals (in the Platonic sense)? Yet how can it escape Platonism when it af-firms real universals (in an anti-nominalist sense)?

Our project, then, is to investigate non-nominalist, non-Platonic dis-course around quiddity at some points in the Middle Ages. Although this may seem like a rather localised project, it is nevertheless of general philosophical interest. Thus it not only raises questions about the status of universals in this period, but also serves as an example of how prob-lematic philosophical discourse in general may be approached for clari-fication and checking of truth-claims. It also has the capacity for sug-gesting new analytic conjectures, including those in § 11 below.

§ 2 *Definition and Grammar*.

In medieval terms, and following the indications transmitted by the consul Anicius M.T.S. Boethius (*ca.* 480-524) and others, definitions of quiddities were framed in terms of the predicables 'genus', 'species', and 'specific difference'. Thus when *man* is defined as *rational animal*, then *animal* is a genus, *rational* is a specific difference, and *man* is a species. In such a definition the genus was seen as the 'material' part, and the specific difference (or '*differentia*') as the 'formal' part: 'The genus is taken after the fashion of matter, and the *differentia* after the fashion of a form. Thus rather in the way and to the extent that the thing in question is made up of matter and form, so also every species is made up of genus and *differentia*. For the genus is to *man* as bronze is to the statue, whereas the *differentia* is to *man* as that form in terms of which the bronze is wrought into shape' (Boethius 1847b: 53A). This, our ac-count of the area, already contains examples of the sort of assertion (e.g. '*Man* is a species') which constitutes the locus of the medieval for-mulation of the problem of universals. For our present purposes, how-ever, such assertions raise important questions for logical grammar, as Boethius already well realised at the close of Bk. I of his commentary on Aristotle's *Categoriae*. There he pointed out how *man* and *animal* may be viewed in two fashions. First, insofar as they are predicable of many things (i.e. insofar as they are, by Aristotle's well-known defini-tion, universals), or secondly, insofar as we are dealing with primary, i.e. individual, substances (Boethius 1847d: 201A-202A). In the first of these two senses, says Boethius, neither animal nor man may be said to be healthy or unhealthy, wise or stupid, and so on, i.e. they are not 'susceptible of contraries' as are the entities dealt with in the second al-

ternative. Only in this latter sense may susceptibility of contraries be asserted (Boethius 1847d: 202A). Thus the impossibility of rightly predicating '.... is ill' or '.... is not ill' of *man* as it occurs in '*Man* is a species' or '*Man* is animal' is used as evidence for the categorial difference between the structure of such sentences and those which are to be found in 'Cicero is ill' or 'The man is ill', and so forth. Already, therefore, the suspicion is being raised that the part of speech under which 'man' and 'animal' are to be subsumed may differ in the two contexts.

A further deepening of this suspicion occurs in the same commentary, and this time Boethius quite overtly uses the tactic of allocation diverse parts of speech in order to evade an undesirable type of inference which is clearly possible in this quidditative neighbourhood. Because Socrates is a man and man is a species, one does not wish it to be possible to thence infer that Socrates is a species. Again, from 'Man is animal' and 'Animal is a genus' one scarcely wants to infer that man is a genus. Boethius appreciated that the shortest and quickest way out of these immediate difficulties is both grammatical and nominalist; all one has to do is to ascend to the metalinguistic level, and say that in problem-sentences such as '*Man* is a species' or '*Animal* is a genus' we are not dealing with assertions about mythical objects called universals, but about names. Indeed, and more exactly, we are dealing, he says (in this nominalist *exposé*) with 'names of names' (*nominum nomina*). Thus 'species' in '*Man* is a species' is a qualification which applies to the name 'man', and reminds us that the subject of the sentence is 'predicable of many individuals'. Likewise 'genus' in '*Animal* is a genus' is another such name of a name, which reminds us that the 'animal' which is here the sentence-subject is in fact a name predicable of many species (Boethius 1847d: 176D-177A). The *nomina nominum* terminology endures throughout the Middle Ages, and persists, in both Latin and English versions, into the work of Thomas Hobbes (1588-1679) (e.g. 1839: 18). It is a pity that this passage from Boethius is never quoted in association with his better-known discussion of Porphyry's outline of alternatives concerning universals (Boethius 1847c: 82-86; cf. Tweedale 1976, Ch. II and Henry 1984a, § 0.4).

But the non-nominalist has a feeling that this ingenious grammatical solution does not do justice to the case. Surely one has a body of truths which can in some sense be said to be about how things are, and not just about names. These truths are in some sense general, or even eternal or necessary. Indeed, a non-Platonic and non-nominalist medieval metaphysician such as Patrick of Ireland (13th cent.) would still want to maintain that 'In the reality of things there is to be found that quiddity which is expressed by the definition. And because that quiddity is some

real nature, quite apart from its being signified, to that nature as such
pertains neither generation nor corruption; as the Philosopher maintains
in his *Metaphysics* 7, *man* in the universal mode is not generated....'
(Patricius de Hibernia 1978: 22). Again, Giles of Rome (1243-1316) also
wanted to conserve the same position. Speaking of quiddity (here called
'*res de se*') he asserts that it 'exists neither in the soul nor in concrete ex-
ternal things. For although some third type of existence which is neither
in the mind nor in external things is not to be admitted, still the quid-
dity itself is in neither of these two' (Giles of Rome 1930, (76)). The
'third type of existence' here mentioned would be the realm of Platonic
abstract entities. He is eliminating them. At the same time, without
being nominalist, he does not want the quiddity as such to be either in
the mind or among concrete individual things. What is required is an
analysis of quidditative discourse which does justice to this mediate posi-
tion.

    We are faced with similar problems of interpretation when dealing with
another contemporary of Thomas Aquinas (1225-74), namely Boethius
of Dacia (fl. 1275). He is concerned to distinguish between unity and
plurality at the generic and at the individual ('specific') levels. Ordinary
(as opposed to logical) grammar would back up the cunning but not
very knowledgeable pupil who replies 'Elephant, lion, and three croco-
diles' to the teacher's question requiring information as to five animals
which are to be found in Africa. What is required is a plain distinction
of level between talk about so many animals in a generic sense, and
about animals at the individual level, notwithstanding that this does
not show up in natural language or its surface grammar. The Dacian re-
marks, 'The mode of manyness appropriate to a generic term differs in
sort from that appropriate to a species term, hence plural grammatical
numbers of different sorts are possible in generic and specific subject-
matters. So suppose someone were to assert, "*Man* and *donkey* are ani-
mals", then were it to be the case that the grammatical plural of the
word "animal" picked out the subject-matter signified by the word
"animal" as merely a manyness made up of many individual objects of
the same species, as opposed to its being made up by various species,
then it would follow that the sentence, "*Man* and *donkey* are animals"
would be false. Similarly in the case of the assertion "Socrates and
Plato are men": were the grammatical plural of this word "man" to
pick out its subject-matter as something which is multiple in the way
that various species are multiple, and not exclusively in the way in which
various individuals of the same species are many, then the proposition
"Socrates and Plato are men" would be false. Hence grammatically plu-
ral numbers of different types are possible in respect of generic and spe-

cific subject-matters, since they are each many in appropriate different ways. There is a difference of type between the manyness of several species and the manyness of several individuals only' (Boethius of Dacia 1969: 166-7, Q. 68, lines 37-53).

This is a magnificent statement, as far as it goes, but the question is: how, in terms of present-day logical grammar, which makes concrete Boethius of Dacia's own initial project for speculative grammar, are we to come to terms with this further exemplification of the distinction between the quidditative and the individual levels, and this in a way which would do justice to his non-Platonic stance? How can we make intelligible the position of Patrick of Ireland, Giles of Rome, and that of those like them who wish to be realists but not Platonists? What is required is a means of analysing statements in this quidditative area which will produce the required results. This makes some foundations of analysis necessary. Here 'analysis' is used in a sense which ultimately results in the clarification of the logical grammar, and hence in some sense of the meaning, of the problem locutions with which we are now concerned.

§ 3 *Parts of Speech*.

For these purposes I propose to take over *en bloc* the proposals made by Czesław Lejewski (b. 1913) in his paper on the syntax and semantics of ordinary language (1975), since they are unique in that they treat expressly, at one point, of that very quidditative type of discourse which is in question above. Briefly, the elements in his outline involve:

(i) a *categorial language*, in terms of which may be carried out:

(ii) *analyses* which show the true, real, deep, or logical structure of the problem locutions in their given context and which permit the use of:

(iii) *categorial indices* (of the Kazimierz Ajdukiewicz (1890-1963) type) which show forth the *parts of speech* or 'semantic categories' which may be read off from the plain notation of the categorial-language expression.

As Lejewski points out, there are many possible alternative categorial languages, with diverse possible primitive parts of speech. Examples would be the artificial language of *Principia Mathematica*, or that used by the Polish Logician Stanislaw Leśniewski (1886-1939) in systems such as Protothetic, Ontology, and Mereology (cf. Henry 1984a, § 6). A sufficiently rich and flexible categorial language allows the introduction into it of parts of speech derived from the primitive by means of well-controlled rules of definition. I shall now endeavour to follow the excellent example of Lejewski (1975) and thus avoid any complex excursions into

the details of the presupposed artificial categorial language. For the pur-
pose of our preliminary exposition an *ad hoc* English of a mildly stilted
sort, which sufficiently mimics the behaviour of the categorial express-
ions to which attention is being drawn, is to be used (cf. Henry 1972, I
§ 3 for a similar tactic). Reference to more technical details will be pro-
vided for those who are interested in following up this preliminary ele-
mentary sketch. (It will emerge that medieval counterparts of items (i),
(ii), and (iii) above are well in evidence. The subsequent parallels be-
tween medieval and contemporary views concerning the relation between
logic and logical grammar are examined in Henry 1984a).

In accordance with this policy, it is only in respect of (iii), i.e. the
categorial indices, that some slight introduction of symbolism is needed.
Given the name (in the broad and medieval sense also used by Leśniew-
ski: Henry 1972, I § 1.1, § 1.2; Henry 1984a, § 2.33) and the proposition
(once again, in the concrete medieval and Leśniewskian sense of *assert-
ive sentence*) as the primitive elements of the logical grammar, we may
use 'n' and 's' respectively (following Ajdukiewicz) to represent these se-
mantical categories (or parts of speech). Such primitives serve to specify
what are now known as 'functors', i.e. incomplete expressions (each of
a given category) which upon due completion form other expressions,
once again each of specifiable category. For example, '.... runs', '....
exists', '.... does not exist', are all incomplete expressions which, upon
completion by a name, form a proposition. We may hence represent
their semantic category by means of the index

   s/n

in which the nature of the required completion is shown on the right-
hand side of the oblique stroke, and the result of such completion on
the left-hand side of the same stroke. In other words, 's/n' is the cate-
gorial index of those functors which, upon completion by a name ('n')
form a proposition ('s'). More briefly, it is the index of single-argument
verbs, or predicates, as represented in present-day artificial languages by
predicate-variables such as 'φ', 'ψ', etc.. However, predicates, while still
remaining predicates, may have their inner structures illuminated in our
appropriately-equipped categorial language by means of 'many-link
functors' which themselves incorporate names as completions. Thus, as
an *ad hoc* English approximation to such a functor available in the cate-
gorial language one has the gapped expression '....-ises'. Upon comple-
tion by a name (e.g. 'deputy') it forms the verb 'deput-ises'. Its category
is hence '$(s/n)/n$'. (Note how this eliminates the necessity for quantify-
ing over predicate variables in a large class of cases. This might comfort
those who, like Quine (1953, Essay I), have qualms about such quantifi-
cation).

We are now equipped to advance to a salient parting of the ways in semantic possibilities which tended to be overlooked in present-day logic, until due reminders were provided by C. Lejewski. Consider, for instance, the functor '.... is ....'. Using examples which enable us to leave aside considerations which arise in connection with the necessity for the provision of articles ('a', 'the', in English) in some languages as opposed to others (e.g. Latin), one may fairly obviously at first sight assign to this functor the categorial index '$s/(n\ n)$', i.e. it forms a proposition from two names, e.g. 'Socrates is literate', 'Plato is captain' (and so on). We are thus at the level of a name-flanked '.... is ....', and this, incidentally, turns out to be the level at which William of Ockham (1285-1349) preferred to work (Henry 1984a, § 2.6). It is in Ockham's case assumed that 'names' of 'real universals' are somehow out of court as possible completions of the functor's gaps; otherwise one would be threatened with Platonism when it came to problem-locutions of the sort associated with the quiddities which we are investigating.

However, as C. Lejewski has repeatedly pointed out, both in his writings (e.g. Lejewski 1957; 1975) and in his lectures, it is possible to see quidditative-type discourse, of which '*Man* is a species' is a representative, as operating at a level which, from the point of view of a logical grammar, would incorporate an '.... is ....' the terms of which are no longer names, but rather more akin to verbs or predicates, i.e. its categorial index would no longer be plain $s/(n\ n)$, but rather the hitherto unconsidered '$s/(s/n\ s/n)$'. Drawing on natural-language examples which were familiar to the medievals in their Latin versions (*currens est movens*, *vivere est esse*, etc.) it is possible to attempt to express this novel sense in terms of approximations such as 'forming the class of men is forming a species', or 'to form the class of men is to form a species', wherein the participles or infinitives now used as terms do duty for the deep-structural verbs which complete this new '.... is ....'. Further, those verbs are in fact many-link functors the completive names of which are the only elements which survive in their surface representation in natural language. Thus 'man' in this context covers a structural many-link functor to which 'being a man' or 'to be a man' are yet other alternative natural language approaches (cf. Henry 1972, I § 3.4). The artificial categorial language of course accounts far more thoroughly for that structure (Henry 1984a, § 6.56, § 6.6; cf. Henry 1972, II § 5).

§ 4 *Quidditative Analysis.*

We now have the means, in fact, of fulfilling the *desiderata* expressed

by Patrick of Ireland, Giles of Rome, and presupposed by Boethius of Dacia's remarks on the various types of plurality (§ 2 above). Also to be covered are the Roman Boethius' remarks about the restrictions on the sense-making possibilities of quidditative discourse. Using an asterisked '.... is* ....' to remind us of the verb-flanked nature of such discourse, it is possible to see *'Man is* rational animal'* as 'Being *man* is* being *rational-animal'* or as 'To be *man* is* to be *rational-animal'* (and so on in the duly defined terms of the full-blown categorial language: Henry 1984a, § 6; Henry 1972, II). This yields statements concerning the reality of things, and shows how among the 'things' (in a quidditative sense of 'thing') is the quiddity expressed by the definition now in question. Patrick's demand that this quiddity should be some real nature, quite apart from its being signified, is thus realised, as also is his reminder that neither generation nor corruption should pertain to quiddity. For it is now plain that the grammar of our categorial language will not allow, e.g. 'Being man is generated', or 'Being man is corrupted', nor for that matter, 'Being man is wise', 'Being man is ill', and so forth, exactly as Boethius the Consul required. This is simply because no such language would want to allow the mixture of completions here displayed (i.e., *s/n* as the first, and *n* as the second).

§ 5 *Definition and Being.*

But, it may well be objected, although one may grant the existence of a present-day categorial language which yields the effect required by medieval Aristotelians, there still remains the question as to whether there is any sign whatsoever that the medievals themselves realised the possibilities of this level of discourse. In point of fact, at least from Boethius the Consul onwards the difference between the quidditative and the nominal (*s/(n n)*) level was well-recognised, as has already been briefly noted above. There was also a well-marked tendency towards the presupposition of a categorial or canonical language (Henry 1984b). The infinitive versions of quidditative-level terms suggested by Lejewski (1975) are contemporary independent justifications of that association of *'esse* ....' ('being ....', 'to be ....') and definition which is adopted from Boethius by Anselm (of Aosta and Canterbury: 1033-1109) and his successors, as the latter's *De Grammatico* makes evident (Henry 1974: 116-7).

Again, the medieval distinction between *significatio* and *suppositio* relied upon the distinction between the two levels, at least in non-Ockhamist contexts (Henry 1984a, § 2.61). Also definition, meaning (*si-*

gnificatio) and understanding (*intellectus*) all formed part of a single nexus, and meaning-statements were founded upon quidditative, definitional, statements. This association is stated thus by Boethius the Consul:

> A definition is the explicitation of that which is compressed and combined in the subject-matter, as when we say that *man* is *rational animal*. Here that which the name briefly and narrowly circumscribes is made manifest and displayed, and the definition makes these things evident by its (as it were) substantial parts. Hence there must be a difference between that understanding of the thing which is combined, insofar as it is expressed all compressed into one word, and that understanding of the same thing when it is explicated and separated, so that it is unconstricted and spread out. For although both the definition and the name signify the same thing, nevertheless that which the name designates in a narrow and confused manner the definition enlarges and makes more openly evident (Boethius 1847e: 1057B).

The same close connection between undersanding and meaning (or sense, *sententia*) is maintained by Anselm, especially in the earlier chapters of *De Grammatico*. A like connection subsists in Peter Abelard's (1079-1142) writings, in an almost identical vocabulary (Henry 1984a, § 4.41) and the same applies to Thomas Aquinas (e.g. Thomas Aquinas 1955b, § 67).

§ 6 *Meaning and Standing-for*.

One may attempt to summarise the situation in this region as involving an at least three-fold set of possibilities:

(1) The name is said to signify that which it stands for, or names, or calls. Here we have a 'standing-for' account of meaning, embodied in what Anselm in ch. XVIII of his *De grammatico* calls *de voce* statements such as those to the effect that 'white' signifies physical objects, 'literate' signifies human beings, as also does 'man'. This view can most obviously be based on that sub-species of what Anselm calls *de re* sentences which involve sentence-formation by means of nominally-termed functors of category $s/(n\ n)$. Ockham tends to adopt this basis for *significatio* as ch. 33 of the first part of his *Summa Totius Logicae* makes abundantly clear. The Student interlocutor of *De Grammatico* is deliberately depicted by Anselm as tending in this direction also. (Henry 1974: 320-2).

(2) In reply to the quidditative question (i.e. 'Quid sit....?') is given a definitional answer which, being *de re*, and not *de voce*, does not explicitly mention meaning or words at all. 'Rational animal' as an answer to such a question concerning *man* exemplifies this procedure, which may

obviously be called 'quidditative'. It is clear from *De Grammatico* that for Anselm the intervention of functors as terms is essential if we are to explain the way in which certain types of name are able to continue to function in ever-new contexts (cf. Henry 1984a, § 3.321). Most important for our present purposes, however, is the realisation that such functorially-termed discourse stands at the level depicted by the categorial index '$s/(s/n \ s/n)$', as described above.

(3) One can use the answer to a quidditative question as the basis for a *de voce* account of the meaning of a word, as when one says that 'man' signifies *rational animal*, that 'animal' signifies *man* as well as *donkey*, that 'white' signifies *having whiteness*, or that 'literate' signifies *literacy* (Henry 1984a, § 3.32). One thus has a quidditatively-founded *de voce* account.

Clearly, it is quite easy to slip from (3) to (1), so that what began in a definitely non-nominal context, as described in (2), becomes confused with the nominally-founded 'standing-for' cases envisaged in (1). After all, for example, it appears just as proper to say that the word 'man' *stands for* rational animals as it does to say that 'man' signifies *rational animal*, notwithstanding the definitely non-nominal foundation (cf. (2)) of the latter. The two cases, namely the 'standing-for' one, founded in $s/(n \ n)$ context, and the *significatio* one founded (for the non-Ockhamist) in a $s/(s/n \ s/n)$ context may, however, be distinguished if the first is catered for by the doctrine of *suppositio* (i.e., on one interpretation, 'standing-for') and the second is associated with *significatio* in the full *per se* sense of this word (cf. Henry 1984a, § 2.61).

The relevance of all this to our central theme is that as long as one does not have the Ockhamist tendency to align *significatio* with standing-for, then the distinction between the two levels, i.e. the quidditative and the nominal, is vital for the understanding of the common distinction between *significatio* and *suppositio*.

§ 7 *Number and Grammar.*

Again, in connection with the joke about the animals in Africa (§ 2 above) these two levels are of assistance in rendering Boethius of Dacia's clear appreciation of the diversity of number in the grammatical sense (i.e. singularity or plurality) where generic and specific subject-matters have to be distinguished in such contexts. He appreciates that this difference might appear in a possible language, although it does not figure in the natural language with which he is acquainted (Boethius of Dacia 1969, Q. 68; Henry 1984a, § 4.35). In fact we now have available (in our

presupposed categorial language) the means for displaying the grammatical diversity of the two types of plurality. At the nominal level, where manyness of individuals coming within the same species is in question, we have, for instance,

> .1 (Socrates is a man) and (Plato is a man) and it's not that (Socrates is the same object as Plato)

Here this minimum plurality of men is expressed in terms of functors of index $s/(n\ n)$. One of its analogues at the quidditative level, with species now replacing named individuals, and with appropriate genus where species figures in the previous case, would be:

> .2 (Being *man* is* being included in *animal*) and (Being *donkey* is* being included in *animal*) and it's not that (Being *man* is* identical with being *donkey*)

Here this minimum plurality of species coming under the genus *animal* is expressed in terms of functors of index $s/(s/n\ s/n)$. We have thus shown the beginnings of how, in our categorial language, there is, on the *de re* plane, a difference between talk about many animals in a generic sense (e.g. elephant, zebra, giraffe, and so on are so many *animals*) and talk (identical in natural-language surface form) about many animals at the individuals-of-the-species level (e.g. those five zebras are so many animals).

§ 8 *Ambiguity of the Indefinite.*

Another quite salient example of the differentiation between these two levels of discourse, and the diverse exigencies of the two, comes in the *prima facie* puzzling medieval distinction between two sorts of 'indefinite' proposition. Thus William of Sherwood (*ca.* 1200-1272) looks on '*Homo currit*', '(a) man is running' as an indefinite (i.e. a mere truncation of 'Some man is running') as contrasted with the similar '*Homo est animal*', the content of which is seen as betokening a quidditative, definitional context, so that it really has the form '(to be) *man* is* (to be included in) *animal*', which, as Sherwood rightly sees, and as our categorial language would show, is inferentially equivalent to 'Every man is animal' (Henry 1984a, § 5.1 deals with this and some of the points now to be raised in this connection).

Peter of Spain (d. 1277) expresses the categorial distinction now in question by distinguishing between the natural and contingent 'matter' of propositions. Thus '*Man* is* *animal*' is in natural matter, and '(a) man is white' involves contingent matter. Since the natural is also the quidditative, this gives the required effect. However, such reliance on

external nomenclature, or on the content of the examples presented, in order to display the categorial status of the parts of a proposition is clearly a poor second-best when compared with the resources of a fully categorial language which would display the quidditative ('natural matter') propositions as having $s/(s/n \; s/n)$ as the index of their main functors. The plainly contingent indefinite has $s/(n \; n)$. However, the various ways in which features of such quidditative-level propositions were discussed are indices of convergence upon such a categorial language.

Thus there is a great deal of literature, some of it collected together by Sten Ebbesen and Jan Pinborg (1970) on the existential import of the quidditative indefinite. There is no doubt on anyone's part that an ordinary indefinite has existential import, but obviously this need not be so in the case of the quidditative indefinites, as the appropriate definitions make clear (Henry 1972, 43.19; Henry 1984a, § 6.6). However, Roger Bacon (*ca.* 1214-1294), for example, saw things otherwise, and ferociously attacks those who hold that an indefinite in 'natural' matter can be true if its referents or apparent referents do not exist (Ebbesen & Pinborg 1970: 41-42). Nevertheless, as just indicated, there is no difficulty in producing a quidditative '.... is* ....' which allows agreement with a position which Bacon attacks, namely that a name signifies its subject-matter at the level of *esse essentiae*, and this is not a matter of actual being (*esse actuale*) (p. 41). Again, a counter-argument to the perverse thesis that if the universal *man* is destroyed, then '*Man* is* *animal*' is false, rightly points out that it just does not make sense to say that the universal *man* is destroyed: *quamvis homo corrumpatur ipso non existente quantum ad esse quod accidit sibi, non tamen quantum ad essentiam suam* (pp. 36-37). In short, a man can perish, but *man* cannot. This accords exactly with the import provided to sentences concerning *man* at the quidditative level by our categorial language, as has been observed above.

§ 9 *Unity of the Genus.*

Further immensely interesting sophistications occur when the connection, also observed above (§ 6), between quidditative discourse and *de voce* signification-discourse, comes into play. Thus given the quidditative truth '*Man* is* *animal*' and '*Donkey* is* *animal*', we should be able to assert the *de voce* theorems '"Animal" signifies *donkey*' and '"Animal" signifies *man*'. But as Patrick of Ireland and many others of his time observe, there is a puzzle here. We are committed to giving an account of the quiddity of *animal* such that the word 'animal' does not

signify the quiddity of *man* alone, and does not signify the quiddity of *donkey* alone, and yet which will leave the quiddities of *man* and *donkey* distinct (and so on in respect of the other species of the genus *animal*). In fact we are now in the sort of situation depicted in § 7.2 above. It is here that the notion of the indeterminateness of quiddity intervenes. Thus, says Patrick, the name 'animal' signifies a quiddity, a real nature, which is found in *man* and *donkey*, and yet does not signify it in respect of *man* alone, since then it would not be predicated save of *man* alone, which is not the case; neither does it signify the quiddity of *donkey* alone, for then it would be predicated of *donkey* alone, and this does not fit the facts. (Here 'predicated' means 'truly predicated'). Rather, continues Patrick, 'animal' does not signify diverse and distinct quiddities insofar as they are diverse and distinct in actuality, nor does it signify one quiddity as an actuality; rather it signifies either quiddity *in an indeterminate manner* (cf. Henry 1984a, § 5.142; Patricius de Hibernia 1978: 24-25).

Here we are at a point of such great moment that we must pause for a while in order to make explicit the bare bones of the logical situation which is puzzling Patrick. Remaining at the level of the *de re* foundational quidditative discourse, the '*per se* predications in the first mode' which are now in question might be expressed in terms of the approximation to our presupposed categorial language, either as being of the form:

.1 Being *A* is* being *B*

or as being of the form:

.2 Being *A* is* being included in the *B*'s

(For fuller notational details, see Henry 1984a, § 5.1; the variables are still nominal). Now the predications which launch the present problem are in fact of the form of .2, e.g. '*Man* is* *animal*', '*Donkey* is* *animal*', and so on, with 'donkey' used as a generalisable instance of the non-rational animals. Each of these *de re* assertions allows the corresponding *de voce* assertion on signification, and this, as noted above, yields a multiplicity of significates for 'animal'. But there is a feeling that 'animal' should signify just *one* quiddity. Now this would be the case if the *de re* foundational assertions were of the form of .1 rather than of .2. Indeed .1 displays in fact the general form of the full text of the definitions which launch all these processes and which are likewise quidditative *de re* expressions (Henry 1984a, § 4.3).

This last sentence reminds us that relatively to our presupposed categorial language, addition of a variable to the .1 form's final term yields an inferential equivalent of the quidditative inclusion form .2, but which now shares in the equivalential form characteristic of .1. For the Aristo-

telian definitional theory to which allusion was made in § 2 above makes it evident that when the variable '*x*' is used for various appropriate specific differences, the following equivalences obviously hold, and are each equivalent to inclusions having the form of .2:

.3 For some *x*, being *man* is* being *animal*-and-*x*

.4 For some *x*, being *donkey* is* being *animal*-and-*x*

Thus we now have, in a sense, a single quiddity (i.e. *animal*-and-*x*) predicated of each of the species of *animal*, after the fashion of the equivalence .1. This is the single quiddity common to *man* and *donkey* (and so on), as required by Patrick of Ireland. His declaration concerning the indeterminacy of the genus (noted above) has an import which is immensely far-reaching. It is certainly not an isolated utterance, and it recurs in Aquinas' *De Ente et Essentia* as a segment of an even more far-reaching metaphysical structure, as we are to see below.

(In both .3 and .4 the '.... and ....' is categorisable as $n/(n\ n)$; it forms expressions which are used as completions (internal) of $(s/n)/n$ many-link functors. These in turn complete an $s/(s/n\ s/n)$ '.... is ....').

The collection of indeterminacy texts in the Roos Memorial volume of the Copenhagen *Cahiers* (Pinborg 1978) is eminently worthy of fuller analysis. The texts belong to the late thirteenth-century discussion of essence, existence, genera, species, and so forth in which Siger of Brabant (*ca.* 1240-1284), Boethius of Dacia, Thomas of Aquino, Henry of Ghent (*d.* 1356), Giles of Rome, Bartholomew of Bruges (1217-1293), and the *viri obscuri* brought to light by Osmund Lewry (1981) are all involved. Before passing on to examine further some of these thirteenth-century developments it may at least be noted in passing that Anselm of Canterbury had already most notably introduced such quantified variables into his excursions in the field of quidditative discourse (Henry 1984a, § 4.42).

§ 10 *Indeterminacy and Matter*.

In the final phase of this exploration of the grammar of quiddity, we may expatiate a little on the vital '... and *x*' supplement which was unearthed above in connection with Patrick of Ireland's search for a unitary indeterminate quiddity common to all the animals. Thus it happens that at the nominal level, the following is a thesis of our presupposed ontology:

.1 For all *a* and *b*, if *a* is *b*, then for some *x*, *a* is *b*-and-*x*

(Here all the variables are nominal: use of '*x*' as such a variable is merely to reinforce the visual link with previous material above. The '.... is

....' is of semantic category $s/(n\ n)$).

The following quidditative-level counterpart of .1 is also a thesis, i.e.,

.2 For all a and b, for some x, if being a is* being included in the
   b's, then being a is* being included in the b-and-x's

Here, as is appropriate at the quidditative level, the categorial index of
the '.... is* ....' is $s/(s/n\ s/n)$.

As they stand, .1 and .2 could initially be seen as comparatively triv-
ial truths, since, for example, the value of 'x' which made .1 true could
simply be the repetition of 'b', or some name constructed from the verb
corresponding to 'b'. However, their significance may be slightly enhanc-
ed by reminding ourselves how we have seen above that *animal* (for
example) at the quidditative level can sometimes be the counterpart of
the pure 'being animal' (s/n) form, without any '.... and x' supplement.
Sometimes, however, as Patrick of Ireland suggested, *animal* is seen as
the incomplete or indeterminate 'matter' of the definition of *man*, and
in that role a 'being a-and-x' form is clearly its counterpart. Aquinas, in
the second chapter of his early *De Ente et Essentia* recalls and extends
this point when speaking of matter and form in relation to the essence
of sub-lunary composites:

> But it cannot be said that one or other of these [i.e. matter and form] can be ex-
> clusively asserted as the essence. For it is obvious that the matter alone is not the
> essence, for a thing is knowable in terms of its essence, and is thereby articulated
> within the scheme of genera and species. Matter, however, is no foundation for
> knowledge, nor does it articulate anything relative to genera and species, except in-
> sofar as something actually exists. But at the same time the form of a composite
> substance cannot be said to comprise exclusively its essence, although some people
> may have been led to assert this. From the foregoing it is obvious that the essence
> is that which is signified by the definition of the thing, and that the definition of
> natural substances comprises not only form, but also matter. Were this not so, then
> natural and mathematical definitions would in no wise differ.

Here reminders of stock points from Aristotelian metaphysics are
being provided; these concern form as the intelligible principle of things,
and matter as the surd element which individuates; this coheres well
enough with what has been said above about quiddity and definition.
What is most interesting, however, is the stress on the indeterminacy
(and hence unintelligibility) of matter, both of which are exactly the fea-
tures conveyed by the '.... and x' when its variable is covered by a par-
ticular quantifier only, as in, for example, the second term of each of
§ 9.3 and § 9.4 above.

Now it is clear that the '.... and x' expression, which is thus the
counterpart of 'matter', can occur, as the instances just recalled show,
either at the quidditative or at the nominal level, the latter being the lev-
el at which names can be used to designate objects. Alternatively ex-

pressed, our logical grammar reminded us in § 9 that the '.... and x', wherein the index of the '.... and ....' is $n/(n\ n)$, may occur as a component of the terms of a many-link functor whose index is $s/(s/n\ s/n)$; we are now noting that it may also occur as a component of the terms of a functor whose index is $s/(n\ n)$. Aquinas is brushing up against both these points when reassuring his readers that use of the notion of 'matter' at the quidditative level does not entail the sort of individuation which occurs in things named at the nominal level:

> But because matter is the principle of individuation, it might seem to follow from this that the essence, thus embracing within itself both matter and form, must be merely particular, and not universal. From this it would follow that universals have no definitions, given that the universal essence is that which is signified by a definition. Hence it should be observed that it is not just *matter* in any sense whatsoever which is the principle of individuation, but only *designated* matter. I call that matter 'designated' which is taken as being of settled dimensions. Now this sort of matter does not figure in the definition of *man* as such. It would, however, figure in the definition of Socrates, were Socrates to have a definition. In point of fact it is non-designated matter which plays its part in the definition of *man*. For in the definition of *man*, this flesh and those bones do not figure, but only flesh and bones in a general sense, thereby constituting the non-designated matter of *man* (Thomas Aquinas 1957, Ch. 2).

In view of the points already made above, the import of this text is transparently clear. At the quidditative, definitional, level, where $s/(s/n\ s/n)$ is the prevailing index, we have the non-designated, indeterminate 'Being animal-and-x' for instance, which Patrick of Ireland required in order to have a quiddity which was unitary and yet predicable of its various sub-species at that level. At the nominal level, where $s/(n\ n)$ is the prevailing index, we have, correspondingly:

.3 For some x, Socrates is the same object as man-and-x

In short, as Giles of Rome so succinctly expresses the matter with reference to both the quidditative and the nominal levels, *species addit supra genus, et individuum supra species*, 'the species has more to it than the genus, and the individual more than the species' (Giles of Rome: 10, lines 10-11). We have already seen the quidditative aspect of this assertion in § 9, and now in the present .3 the x is susceptible of being instantiated (or 'designated') by all the details, including the spatial and temporal 'dimensions', which individuate Socrates to being this particular man. The theories of such 'dimensions', in their turn, are covered in a general way by the mereology (Henry 1984a, § 4.5; Henry 1972, III § 8) and in more detail by the stereology (theory of space) and the chronology (theory of time) which lie beyond the mereology.

Two further quidditative points from *De Ente et Essentia* may now be explored. First, there is that reiteration of the determined/undeter-

mined terminology which, as we have seen, has as its counterpart the contrast between the instantiated and the non-instantiated '.... and *x*' variable at both the quidditative and the nominal levels. It is surely to this that Aquinas is approximating, to the extent that his variable-free language will permit him, in a passage such as the following: 'And, as has been said, the nature of the species is indeterminate with respect to the individual, even as the nature of the genus is with respect to the species. Hence it comes about that that which *is* the genus, insofar as it is predicated of the species, implicitly contains in its meaning, although in an indistinct manner, the whole of that which is to be found determinately in the species. Hence likewise it comes about that that which *is* is the species, insofar as it is predicated of the individual, must embrace in its meaning the whole of that which is essentially in the individual, although again in an indistinct manner. It is in *this* fashion that the essence of the species is signified by the name 'man'; hence also 'man' is predicated of Socrates'.

Here it is becoming fairly obvious that 'predicated of' at the nominal level entails for Aquinas an identity such as that shown in .3 above, and that its analogue holds at the quidditative level, i.e. the general form in question, where '*a*' is the species-name and '*b*' the genus-name, is:

.4 For some *x*, being *a* is* being the same 'object' as *b*-and-*x*

Finally, this last expression is a clear derivative of the general form of definitions constructed on Aristotelian lines, i.e. by recourse to genus and species, with the genus *b* rendered as the 'matter' of the definition by being coupled with the '.... and-*x*' component. This accords with Boethius the Consul's view of the genus as the 'matter' of a definition; cf. § 2 above.

In this way all the evidence from Aquinas and Patrick of Ireland illuminates a puzzle which could subsist in this quidditative region as to the form of predications '*per se et primo modo*' which are derived from definitions. That evidence suggests that such predications are of the form of this latter .4. However, another point is now emerging, and may now serve as a suitable appendix to the foregoing, namely the suspicion that a great deal of medieval talk about 'matter', either at the quidditative (*s/(s/n s/n)*) level or at the nominal (e.g. *s/(n n)*) level is simply talk designed to achieve the effect which is nowadays achieved by the use of a variable covered by a particular quantifier. (On the sense of such a quantifier, see Henry 1984a, § 2.3). The notion of *matter* as something potential would thus be the correlate of the openness of the variable to its possible substituends. A slight deepending of this suspicion will now terminate the present essay.

§ 11 *Matter and Intelligibility*.

There is a noteworthy concidence between descriptions of the im-
port of the pronoun, correlate, according to Quine and others, of the
variable (Quine 1953: 13, 102, 136, 146) and descriptions of *matter*, in
some of its multiple Aristotelian senses. Thus both proceed by way of
negation of any intrinsically intelligible content. Aristotle, in his *Meta-
physica* (1029ᵃ) described matter as a something which is neither of a
particular sort, nor of a particular dimension, and so on, negating with-
in each of the categories to which a 'something' can be assigned. Inter-
estingly enough, he also remarks how this could make matter into an
ultimate sub-stance, doubtless the origin of Aquinas' remarks about
matter as the 'first subject' (Thomas Aquinas 1888-1906, III, q. 77, art.
2, *c*) and as being in potency to all forms (Thomas Aquinas 1918-30,
III, 6). This also brings us near enough to the traditional grammatical
description of the pronoun as signifying 'substance without quality',
along with those worries about consequent unintelligibility which have
been documented in Henry 1984a, § 3.32301. Such unintelligibility is, of
course, exactly similar to that assigned to matter by Aquinas in the pas-
sage quoted in § 10 above. The Student of Anselm of Canterbury's *De
Grammatico*, when attempting to expatiate on the pronoun '*aliquid*',
'something', which is obviously playing the part of a nominal variable in
that context, uses exactly the notion of indeterminacy which we have en-
countered in the texts of Patrick of Ireland and Aquinas, and which is
also a characteristic of matter: 'As *white* is equivalent to *having white-
ness*, it does not determinately signify this or that object having white-
ness, such as a body; rather it signifies indeterminately (*indeterminate*)
something having whiteness' (*De Grammatico* XX; Henry 1974, 4.801).
If, in view of such evidence, the hypothesis is adopted that in our cat-
egorial language the particularly quantified variable (as in most of the
expressions involving '.... and *x*' encountered above) is the notational
counterpart of much Aristotelian talk about 'matter', then there arises a
crucial pair of alternatives as to the ways in which theses § 10.1 and
§ 10.2 above are to be taken.

We may gain some notion of the nature of these alternatives by way
of yet another return to the first of Aquinas' passages recorded in § 10
above. At its close he concluded that the definitions of natural sub-
stances comprised not only form, but also matter, otherwise *natural and
mathematical definitions would in no wise differ*. The point here is that
while mathematical definitions may well proceed according to some sys-
tem of genera and species, and may hence even have a 'material' part
(the genus) and a formal part (the *differentia*) there is a limit, as it were,

to the possible substituends for the '.... and *x*' in the indeterminate genus: a number (considered as a genus) must be either even or odd, a line (likewise considered as a genus) must be either straight or curved; the utterly simple content of each of these substituends brings them within the realm of the fully knowable: *quantum aliqua sunt finita in tantum sunt scibilia* (Thomas Aquinas, 1955c, § 335). Hence it is that mathematical matter is intelligible: *mathematica abstrahit a materia sensibili, non autem a materia intelligibili* (Thomas Aquinas 1955c, § 494). Mathematical definitions, even at the generic level, are thus in some sense closed and bounded (*'finita'*); hence their detachment from the senses (cf. Henry 1984a, § 4.234(C)). (Hence also, of course, the 'clarity and distinctness' of their 'ideas', according to Descartes). In contrast, the definitions of sub-lunary composites, i.e. of material, sense-perceived objects, are not subject to the same sort of limit; the possible instantiations of the '.... and *x*' (e.g. in the material genus *animal*) spread out among the species in question in a bewildering profusion of ways. This explains, once again according to Aquinas, why Plato was mistaken in identifying the superlunary separate and 'simple' substances, the 'pure forms', with the universal quiddities of sense-involved species:

> As regards the number of separate substances, various people have gone various ways. Thus Plato equated the separate substances with the species of sense-involved things, as if, for example, we were to taken human nature to have an existence separate in itself. This view demands assertion of a correlation between the number of the separate substances and the number of the species of sense-involved things. But Aristotle disproved this thesis on the basis of the intervention of matter in the species of sense-involved things. Hence the separate substances cannot be the exemplary resemblances of these sense-involved things, but must have some essences which are of a higher sort than are the natures of sense-involved things (Thomas Aquinas 1888-1906, I, q. 50, art. 3, *c*).

Evidently, individual objects, with their individuating *materia signata*, are even more unintelligible owing to the lack of bounds implied by such matter (*infinitum congruit materiae, quae est individuationis principium*: Thomas Aquinas 1955c, § 335).

Without lingering to comment on the often-forgotten hyper-Platonic nature of this 'disproof' of Plato, we may at least see it as emphasising the nature of the parting of the ways at which we have now arrived. One can either take the rationalist path, and insist that the indeterminacy betokened by the '.... and *x*' (whether at the *s/(n n)* level or the *s/(s/n s/n)* level) should be a bounded or at least a purely intelligible one, as in the cases of mathematical objects or the 'pure forms', the superlunary simple substances. John Duns Scotus' (1265-1308) insistence that individuation is performed by formal elements (*'haecceitas'* and so forth) as op-

posed to material elements, is of the rationalistically-inclined sort, and designed to ensure the ultimate intelligibility even of the individual, although only God could think through the plethora of mereological, chronological, stereological and other detail which would ultimately fill out the individual quiddity. Thus is removed the threat of the ultimate metaphysical unintelligibility of the individual, even for God, which was posed by the other alternative, i.e. the use of non-intelligible *materia signata* as the principle of individuation (cf. Thomas Aquinas 1888-1906, I, q. 14, art. 11). As this last reference shows, for Aquinas it is as their cause that God knows material singulars, and not directly.

Indeed, as just implied, it is at the nominal level, i.e. that of the sublunary concrete individual, that Aquinas takes the unintelligible '.... and-x' component to its extreme. No theory could ever encompass the ineffability of the individual as such, unless, of course, the individual in question happens to be one of the super-lunary 'pure forms' or 'simple substances' countenanced by Aquinas, in which case their grammar rejoins that of quiddity without a surd '.... and-x'. Hence the analysis of superlunary discourse in terms of the quidditative-level facilities made available in our categorial language can proceed either without the use of '.... and-x' at all, or, if it is used, this is with the understanding that the immateriality of the pure forms puts strict limits on its alternative substituends, as in the case of the 'mathematicals' mentioned above. In these terms sense can be made of Aquinas' thesis that each of the pure forms must be a species, in the absence of individuating *materia signata*. We may extend, therefore, the point made in § 7 above on Boethius of Dacia's two types of plurality: the assertion that Michael and Uriel are angels stands on the same semantic level as does the assertion that *man* and *donkey* are both animals (as opposed, for instance, to saying that Socrates and Plato are animals). The immaterial Leibnizian monad, a derivative of these pure forms, is in the same case.

This Leibnizian example helps us to realise that a rationalist philosopher, athirst for the clarity and intelligibility which used to be allegedly present in the super-lunary realm, will tend, like Descartes, to discount the ultimate reality of the surd '.... and-x' aspect of things, an aspect so powerfully recalled at both the quidditative and the individual level in J.P. Sartre's *La Nausée*.

REFERENCES

Boethius, Anicius Manlius Torquatus Severinus. 1847a. *Opera Omnia.* Tomus Posterior. (=*Patrologia Latina*, 64.) Paris: J.-P. Migne.

———. 1847b. *In Porphyrium Dialogi*. Boethius 1847a. 9-70.

———. 1847c. *Commentaria in Porphyrium. Ibid.* 71-158.

———. 1847d. *In Categorias Aristotelis. Ibid.* 159-294.

———. 1847e. *In Topica Ciceronis Commentaria. Ibid.* 1039-1174.

Boethius of Dacia. 1969. *Modi significandi sive Quaestiones super Priscianum Maiorem*. Ed. by Jan Pinborg & Heinrich Roos. (=*Corpus Philosophorum Danicorum Medii Aevi*, 4) Copenhagen: G.E.C. Gad.

Ebbesen Sten & Jan Pinborg. 1970. *Studies in the Logical Writings attributed to Boethius of Dacia.* (=*Cahiers de l'Institut du Moyen Âge grec et latin*, 3.) Copenhagen: J.A Petersen & K.C. Christensen.

Giles of Rome. 1930. *Theoremata de esse et essentia.* Text and introduction by E. Hocedez. Louvain: Museum Lessianum.

Henry, Desmond Paul. 1972. *Medieval Logic and Metaphysics: A modern introduction*. London: Hutchinson & Co.

———. 1974. *Commentary on 'De Grammatico'.* (=*Synthèse Historical Library*, 8.) Dordrecht: D. Reidel.

———. 1984a. *That Most Subtle Question (Quaestio Subtilissima): The metaphysical bearing of medieval and contemporary linguistic disciplines*. Manchester: Manchester Univ. Press.

———. 1984b. "Anselmian Categorial and Canonical Language". *Les Mutations Socio-culturelles au tournant des XIe-XIIe Siècles: Etudes Anselmiennes*, Paris: Editions du CNRS.

Hobbes, Thomas. 1839. *Computatio, sive Logica. Opera philosophica quae latine scripsit ominia* ed. by W. Molesworth, vol. I, 1-80. London: J. Rohn.

Lejewski, Czesław. 1957. "Proper Names". *Proceedings of the Aristotelian Society*, Suppl. Vol. 31.

———. 1975. "Syntax and Semantics of Ordinary Language". *Proceedings of the Aristotelian Society*, Suppl. Vol. 49.

Lewry, Osmund. 1981. "The Oxford Condemnations of 1277 in Grammar and Logic". *English Logic and Semantics*. Nijmegen: Ingenium Publishers. 235-278.

Patrick of Ireland. 1978. *Sophisma 'Homo est animal'*. Roos 1978. 16-34.

Pinborg, Jan, ed. 1978. *Henrici Roos in Memoriam.* (=*Cahiers de l'Institut du Moyen Âge grec et latin*, 24.) Copenhagen: Stougaard Jensen.

Quine, Willard V.O. 1953. *From a Logical Point of View*. Cambridge, Mass.: Harvard Univ. Press.

Roos, Heinrich. 1978. *Drei Sophismata zum Formproblem in der Hs. Uppsala C 604*. Pinborg 1978. 16-54.

Thomas Aquinas, Saint. 1888-1906. *Summa Theologiae*. 9 vols. (=*Opera omnia*, iussu Leonis XIII P.M. edita, 4-12.) Roma: Typographia Polyglotta.

——. 1918-30. *Summa contra gentiles*. 4 vols. (=*Opera omnia*, iussu Leonis XIII P.M. edita, 13-16.) Roma: Riccardo Garroni.

——. 1955a. *In Aristotelis Peri Hermeneias et Posteriorum Analyticorum expositio*. Ed. by Fr. R.M. Spiazzi. Torino: Marietti.

——. 1955b. *In libros Peri Hermeneias expositio*. Thomas Aquinas 1955a. 1-144.

——. 1955c. *In libros Posteriorum Analyticorum expositio*. *Ibid*. 145-404.

——. 1957. *De ente et essentia*. Editio tertia. Torino: Marietti.

Tweedale, Martin M. 1976. *Abailard on Universals*. Amsterdam: North Holland Pub. Co.

THE GRAMMARIAN'S CONTRIBUTION
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The history of grammatical thought is characterized by a preponderant concern with word-classes — their number, definition, subclassification and the grammatical categories necessary for an exhaustive and coherent analysis of data drawn principally from Latin and Greek. Despite an early recognition of some such form as the sentence or the *oratio perfecta* as a minimal unit of meaning, semantic questions centred principally on the meaning of words — especially of nouns and verbs. This treatment of meaning was, for many long centuries, largely etymological (in the broadest sense of the term); concerns dealt with the natural origin of words (whether arbitrary or conventional), with their relation to the name-giver, with their ability to mystically encode meaning through some motivated or unmotivated combination of sounds. Their status as nominalist or realist entities, as constituting universals or particulars has posed philosophical, metaphysical and logical problems of perennial concern. To a larger or lesser degree, these questions continue to be central issues in the discussion of language from the Renaissance through the Enlightenment. That a word-class analysis *per se* constitutes not only a primary concern but also a methodological approach to the problems of language is evidenced by Michael (1970: 201-80) who indicates that in England alone between the beginning of the sixteenth century and the end of the eighteenth no fewer than 56 different word-class systems were established.

The particular aspect that I would like to focus on in what is obviously a highly complex set of problems can best be presented in the words of Thomas Hobbes (1588-1679). Hobbes stated: "a name is not taken in philosophy, as in grammar, for one single word, but for any number of words put together to signify one thing." (1981: 213) Leaving aside its

nominalist implications, the statement may be regarded as in some way encapsulating the evolution of linguistic concerns over the period under review in that the interests of the grammarian as well as of the philosopher move from the study of individual terms to the study of complex terms. The question that I wish to address more particularly is the role that the word-classes and the grammarian played in this evolution.

The period from the early decades of the sixteenth century to the closing decades of the eighteenth was one in which the problems of language engaged the interests of an ever-widening range of scholars. Amongst the generalizations that may perhaps be safely made is that linguistic and grammatical problems came to be progressively dominated by epistemological concerns. If language as an object of study became increasingly the concern of philosophers, mathematicians and logicians as well as of grammarians, one may justifiably claim, at least in some general sense, that the major influence flowed from the philosopher to the grammarian rather than the other way around. In short, it was the Hobbes and the Lockes, the Descartes and the Arnaulds, the Leibnizes and the Condillacs who eventually determined how the problems of language were to be approached, both methodologically and in terms of the theoretical postulates upon which theories of language and mind and grammatical accountings were formulated. By the eighteenth century certainly, they largely determined how the classification of the parts of speech was handled, in principle if not in detail.

A second readily acceptable generalization is that, in this period of nearly three hundred years, linguistic discussion moved from the study of terms to the study of propositions; the grammarian's interests changed — or were forced to change — from the word-centred studies implicit in the notion of word-class to consider problems of meaning that were, at very least, variously logico-semantic or semantico-syntactic in nature. This point has been well demonstrated by numerous scholars and more specifically by Stephen Land (1974). Another way of describing this development is to say, with Auroux (1979), that the study of language problems culminates — in the general grammars of eighteenth-century France at least — in a 'syntaxe sémantique' that itself depends upon complex semiotic theories involving numerous interdependent and interlocking theories *about* language — theories about its origin, evolution, acquisition, and sociological and communicative roles.

A third generalization may be made that presents a rough classification of the types of grammatical works undertaken over this period. First, there were the grammatical studies relating specifically to Latin (and to a lesser extent of Greek) and initially reflecting the Humanists' concern with medieval Latin usage and, of course, with its grammatical

accounting. These rely, by and large, on the classical authority of Dona-
tus and Priscian, of Varro and Quintilian, more especially in terms of
the definitions and categories applied to the word-classes. Second, there
was the initially slow but later rapidly developing interest in the gram-
mar of both vernacular and newly-discovered languages. Given the
largely practical motivations for these works, they tend to be data-
oriented rather than theory-oriented; they are normative, descriptive and
centred on usage and yet rely almost solely on the word-classes and the
grammatical categories furnished by Latin. A third type of grammatical
study is represented by the philosophical grammar; although still imbued
with the practical concerns of the more patently pedagogic grammars, it
tends to be concerned with explanation rather than description, with
universal principles rather than the statement of grammatical rules, and
with a growing emphasis on theory rather than data. Matter and mind
— the ever-present philosophical concern — merge in terms of mental-
istic justifications.

These three strands of grammatical enquiry did, of course, overlap
and influence each other. However, despite their different objectives,
they all adopt the traditional concept of the word-class as some central
descriptive or theoretical construct. In this interplay between the practi-
cal and the theoretical, between the grammarian and the philosopher, I
believe that the concerns of the grammarian had, over the whole period,
a generally positive influence in a number of ways. First, they ensured a
connection with the data. Thus, even the most speculative of eighteenth-
century grammarians were also for the most part teachers — and teach-
ers of language. Their pragmatic as well as their theoretical concern with
pedagogy ensured to a large extent that their theories never lost sight of
the data. Increasingly elaborate and coherent theories of language — the
metatheories to their grammatical theories and accounting — also fur-
nished the methodological postulates for their pedagogy. Again, the
grammarian-pedagogue was necessarily concerned with usage whose pro-
scriptive role, even in terms of its anomalies, had to be accounted for.
Likewise, the rhetorical figures, rapidly becoming to be treated not only
as the emotive as opposed to rational aspect of communication but also
as the appendages of literary stylistics, required to be accounted for at
the pedagogical level and therefore also within the framework of a co-
herent linguistic theory.

Certainly, under the influence of Locke and Descartes language be-
comes the domain upon which questions metaphysical, logical and episte-
mological meet and seek their appropriate resolutions. The philosopher
becomes grammarian and the grammarian becomes philosopher. Yet in
this broadening of language-studies as the test-bed of new epistemologi-

cal systems, the ever-present concept of word-classes can I believe, be seen as an inhibiting factor, particularly in the study of meaning as this relates to "any number of words put together to signify one thing". Moreover, the introduction of truly new *grammatical* concepts comes about as the grammarian's response to the evermore elaborate rationalist and sensationalist theories of mind. If language is seen to reflect or to mirror thought and thought itself is accounted for by a variety of differing psychological/epistemological presuppositions about signs, then the grammatical studies, while undoubtedly contributing to the elaboration of theories of mind, nevertheless have a greater tendency to *react* to them. In short, despite the everincreasing ingenuity found in the grammatical theories of the seventeenth and eighteenth centuries, the grammarian himself contributes comparatively little in the way of original *grammatical* or *linguistic* concepts.

The Word-classes

That word-classes so long represented the primary concern of the grammarian presumably comes about for two main reasons. First, even if hard pressed to circumscribe the concept of what constitutes a word, speakers are nevertheless intuitively aware of what constitutes a word in their language. Second, a Porphyrean classification represents a methodological convenience in that it permits the coming to grips with data by the extrapolation of identifiable, generalizable and manageable constructs. That such classification can be made the basis for explanation — be this ontological or epistemological — is, to a degree, fortuitous.

The establishment of the word-classes has relied on linguistic criteria that are avowedly notional (or semantic), formal (or morphological), and functional (or syntactic), and until fairly recently on the rarer application of distributional criteria. The problem inherent in these attempts is, of course, that the hypothesized classes are not all exhaustively circumscribable by any one of these criteria. The resultant mixtures of semantico-morphological and morphologico-syntactic definitions confuse and obscure the hierarchy of relations that link content and expression, that is, the syntactic hierarchy and its functional meaning. Irrespective of the level at which any analysis is undertaken *subsequent* to the establishment and definition of the word-classes — that is to say, whether the data is entered at the level of semantics, syntax or morphology — the word-class definitions (established *in vacuo*) prove a methodological embarrassment. These, of course, are problems of a logical or methodological nature. Epistemological concerns and philosophical criteria de-

pendent upon the dichotomy of matter and form are also inescapable. If
words are signs, what are they the signs of? Do they have reference and
if so, is it to things, to our concepts of things, to universals or to par-
ticulars? Can these features be generalized to provide a classificatory
framework and are the word-classes then to be given an ontological ac-
counting (as in the Middle Ages), an epistemological accounting (as in
some instances in the seventeenth century), an ideational accounting
(as with Port-Royal and its successors)? Are such accountings useful,
necessary or indeed applicable to a linguistic accounting? The decisions
affect both the number and the type of word-classes established as well
as the categories that are used to differentiate them on the one hand and
to relate them into functioning groups on the other.

The concept of word-class has always implied — and indeed has his-
torically presupposed — the existence of some such concomitant con-
cept as the *oratio perfecta*, be this in terms of sentence, subject and at-
tribute, judgement or proposition. Thus, if lexical items concatenate to
produce a complete and meaningful utterance, then word-classes them-
selves must permit the concept of this concatenation. Concord and rec-
tion therefore become the indispensable minimal concepts that allow the
items arising from a classificatory procedure to become the participants
in an item-and-arrangement concatenation. Moreover, the fact that the
word-class model is based upon Latin inescapably introduces that con-
cept of word-paradigm. Consequently, the fact that words consignify
(internally in terms of their morphological accidence and externally in
terms of their functions) must be explicitly acknowledged within any sys-
tem of word-classification; the application of a taxonomic approach to
the linguistic elements identified, no matter how tentatively, as words
leads to a progression from *vox* (the combination of sounds) to *dictio*
(the meaningful combination of sounds, i.e. the linguistic sign) to *oratio*
(the functioning linguistic sign).

As used in traditional grammar, the word-class approach attempts to
classify the *oratio* and not the *dictio*; in fact, most analyses degenerate
at some point into a mere listing of lexical items, that is of *dictio* rather
than *oratio*. Thus the nouns are broken down into finer subclasses to
establish specific as opposed to generic nouns; the criteria become inex-
tricably confused between the formally linguistic e.g. proper and com-
mon and the epistemological, i.e. scientific genus and species. This pro-
cedure is extended to the syncategorematic classes so that the concept
of, let us say, preposition merely becomes a label under which to list the
items deemed to be prepositions.

Irrespective of the particular criteria adopted to establish the word-
classes, certain problems recur. Thus, is the interjection to be regarded

as a word-class or does it have a special status that excludes it? Are participles and/or gerunds to be established as universal classes even in languages that do not formally distinguish them? Are noun and pronoun different word-classes or should the pronoun be classed as a subcategory of the noun? Is the category 'person' to be assigned to nouns as well as pronouns? Are articles a separate word-class or are they a special class of adjective? What is the relation between prepositions and cases? Are prepositions to be defined in terms of their syntactic function in relation to nouns or in terms of their morphological function in relation to derived forms? Can the word-classes be split into two major classes, and if so, on what basis? Is declinability to be established in general terms or on the basis of a particular category, and if the latter, which of the categories of number, gender, case, tense, person, mode is to be given priority? All these problems are inherent in the classificatory procedures upon which the concept of word-classes depends; they are resolved in a great variety of fashions depending on the ontological, epistemological or ideational criteria adopted. and in the eighteenth century a further dimension is added in that the ontogenetic and phylogenetic problems of the origin and acquisition of language pose — or re-pose — the question of the diachronic and synchronic primacy of the word-classes.

The overriding effect of this concern with the concept of word-classes was first, as Hobbes noted, to centre interest on single words rather than on "any number of words put together to signify one thing". In the second place it guaranteed the continued existence of the concepts of concord and rection — 'la syntaxe de convenance et de régime' — as the sole grammatical means by which groups larger than the word and smaller than the sentence could be handled. In short, the word-class approach establishes a methodological straitjacket from which grammarians only slowly and laboriously freed themselves. As Chevalier (1968) has so convincingly shown, this was achieved largely through the concept of complementation.

The Sixteenth Century

In the sixteenth century, word-classes remain the cornerstone of grammatical theory. Although this necessarily entails an appropriate epistemological basis, it does not necessarily entail an epistemology. It is, by and large, difficult to extrapolate any coherent theory of language that may be said to underlie and give theoretical justification to the grammatical analyses and to the elaboration of the different word-class systems that characterize the works of sixteenth-century grammarians in

both Latin and the vernaculars. This, of course, is to be expected. The Humanists rejected the ontological basis upon which the Middle Ages had founded a sophisticated and reasonably coherent theory of language and linguistic theory which, in terms of its *modus essendi, intellegendi* and *significandi*, had allowed for an equally sophisticated semantic theory. The Humanists' attitudes were reactionary in that they appealed to classical usage to establish their data and to classical grammatical authority for their descriptive and normative accounting of the art of *recte loquela*.

The epistemological foundation adduced to account for the word-classes was to a large extent eclectic. For example, in the work of such scholars as Thomas Linacre (*ca.* 1460-1524) and J.C. Scaliger (1484-1558), aspects of Aristotelian and modistic ontology remain. The concepts of form and matter, of substance and quality persist, as do those of flux and permanence. *Ens* and *esse* continue to play supporting roles to the concepts of *res*, of *actio* and *passio* and of *agere* and *pati* which still provide the basis for the rational classification of noun, verb and participle. Logic provides the adequation for the *oratio perfecta* and for the semantic and grammatical primacy attributed to the noun and verb as well as for the ordering of these elements in the *constructio*. On the other hand, the grammarian manipulates the inherited word-classes and the grammatical categories to attain ever greater logical, that is classificatory, coherence. For example, the categories of gender, number, person, tense and mode undergo a variety of hierarchical orderings in their application to the definition of the word-classes. Negative markings — the absence of a category — come to be used as defining systematic features; number, understood as both a semantic and a grammatical category and reduced (by Franciscus Sanctius (1523-1601)) to the concept of singular and plural, slowly emerges as the initial criterion upon which the inflected word-classes are distinguished from the rest. Dichotomization, long recognized in the division of the classes into the *categoremata* and the *syncategoremata*, becomes with Petrus Ramus (1515-72) a methodological necessity; the need to move from the general to the specific leads to the discussion of shared categories (number and gender, for example) in abstraction from the word-classes to which they are to be applied. This examination and ordering of the categories results in part from the search for descriptive economy as a methodological desideratum; in part, it results from the inappropriateness of some of the Latin-based categories to the description of the vernaculars which in turn leads to a questioning of their appropriateness and their order of application to Latin itself. In a way then, although the epistemological underpinnings to the concept of word-classes continue to depend heavily

upon traditional views, we already see some methodological concerns
that represent what may be deemed the first attack upon the monolithic
view of the word-classes.

It remains true, however, that the final recourse open to a word-class
approach is a listing. Consequently a great deal of energy is expended in
the sixteenth century (and indeed right through to the eighteenth cen-
tury) in elaborating complex systems of metalinguistic labels as devices
for subclassification. Thus, case forms, such as the genitive and the dat-
ive, give rise to lists of terms judged to exemplify and explain the mean-
ings of the cases; lists of prepositions and of conjuctions under labels
furnished by Aristotelian categories exemplify the meaning and function
of these parts of speech. On the more positive side, however, lists of
lexical items — particularly nouns and verbs — are established on the
basis of their meaning being seen to be *relative* or *absolute* — that is, as
needing or not needing complementation. If the generalized word-class is
still seen as an entity which can or can not "stand by itself", individual
lexical items are understood to maintain their semantic independence —
to be meaningful both in and out of context — on grounds other than
their word-class membership, that is in terms of their systematic rela-
tions to other semantic elements. Again, the monolithic view of the
word-classes is at least questioned if not as yet seriously challenged. The
noun group — an example of "a number of words put together to sig-
nify one thing" — starts to be liberated from its word-paradigm analy-
sis. Thus, much discussion revolves around the question of nouns in ap-
position; the apposition of pronoun plus noun — e.g. *ego auctor* and
pronoun plus adjective — e.g. *ego Romanus* raises the question of
whether nouns and adjectives are both marked for person. Although
most sixteenth-century grammarians appear to reject this analysis, and
as we shall see, resolve the problem of apposition from another point of
view, the very fact that the possibility is raised indicates how the seman-
tic unity of the word group as opposed to the word is nevertheless still
seen almost entirely through the concepts of concord and rection.

On the other hand, the sixteenth-century philosophical grammarians
are very much concerned with the elaboration of the *ratio* and the *cau-
sae* of language, that is, with the metatheoretical concepts that can ac-
count for the universality of language. These may still be sought in Ari-
stotelian ontology (as in the case of Scaliger) or within some ill-specified
model of ratiocination as characterizing the speaker (as in the case of
Linacre). At all events, some grammarians of the sixteenth century suc-
ceed in elaborating (or at very least in adumbrating) a number of strictly
grammatical concepts (largely syntactic in nature) that lay the linguistic
basis for the explanatory models of the seventeenth and eighteenth cen-

turies. The first, and I would submit the most far-reaching of these concepts is that which establishes the predicative function of verbs — that is, the idea that all verbs are equivalent to the copula plus a participle. The idea was, of course, not new, dating as it does from Aristotle; and the Middle Ages had recognised the difference between the *verbum substantivum* and the *verbum adjectivum*. In the sixteenth century, however, the concept (which rapidly becomes common even in pedagogic grammars) permits the word-classes as a whole to be seen in a new light. In the works of such representative scholars as Linacre and Sanctius, an utterance such as *homo ambulat* is seen as relatable to the form *homo est ambulans*. The possibility of establishing such a relationship opens up the broader question of derivability on the one hand, and on the other raises the question as to whether word-classes have a phenomenological existence in the utterance *per se* or at some more abstract level of analysis and derivation. The answers provided by the sixteenth century are not entirely clearcut. Peculiarly enough, having stated that all verbs are reducible to the copula plus participle, Linacre never pursues the analytical possibilities in his subsequent treatment of verbs. Rather, he establishes the *verba absoluta* — the intransitives — as a class semantically complete in themselves as opposed to the *verba transitiva* which require semantic completion. This division is made, however, purely at the classificatory level. In terms of their functioning, Linacre seeks a generalized explanatory principle; he explains the intransitive *curro* in terms of *curro cursum* (not in terms of *sum currens* as one could expect) and the passive form *curritur* by *cursus curritur*. Sanctius will generalize this principle to maintain that all verbs are — at some level of analysis — transitive in form. What is important about these analyses is that single lexical items — members of unique word-classes — are given a paraphrastic accounting indicating that a unique content is not necessarily to be regarded as being commensurate with a unique, single form.

I have already indicated that the noun group gave rise to discussions that demonstrate that it was approached very much from the point of view of a word-class analysis. On the other hand, noun plus noun, noun plus adjective and noun plus participle find a coherent justification (along with the predicative sentence) on the basis of a mediating construction that includes *ens*. *Ego auctor* is not a case of apposition but is derived from *ego ens auctor* or *ego sum auctor*. Sanctius, in discussing the problem of the attribution of proper nouns, e.g. *Roma magna*, circumvents the logical anomaly that such attribution implies by postulating the form *Roma est urbs magna*. The construction of words in the utterance ceases to depend solely upon the item-and-arrangement model that is inherent in a word-class grammar. An item-and-process model

becomes a possibility, with the processes — part of the *ratio* of language
— being sought in the mental capacities of man as speaker; the judge-
ment to give logical content and form, and some equally ratiocinative
but strictly linguistic capacity that enables utterances to be derived.

Linacre pursues this line of thought to account for the differences
between the *constructio justa* and the *constructio figurata*. The latter ex-
hibits enallage, defect, pleonasm and hyperbaton; the processes of sub-
stitution, ellipsis and transposition are adduced as the linguistic pro-
cesses by which the *constructio figurata* is explained and possibly, de-
rived. However, as Breva-Claramonte has indicated (1983: 57) since Lin-
acre seeks to justify his *emendata structura* — that is his explanatory
reconstructions — on the basis of historically occurring models, it is dif-
ficult to conclude that he is postulating some abstract level of mental or-
ganization (for want of a better term the 'logical proposition' or the
'underlying structure') as has in fact been claimed (for example, by
Padley (1976: 54). Moreover, Linacre's definition of ellipsis as "dictionis
ad legitimam constructionem necessariae *in sensu* defectus" (my empha-
sis) seems to imply that the missing elements are not a syntactic but a
semantic requirement. However, meaning and word-class meaning ap-
pear to be separated, which is itself a necessary condition to escape from
the limitations imposed by a word-class analysis. In Linacre, one can see
outlined the principles — in large degree perfected by Sanctius — which
will permit later generations of grammarians to provide a *linguistic* ac-
counting of semantic problems and to move along the path which takes
the study of language from a description of the *art de bien parler* to an
accounting of language as a model reflecting the processes of thought to
the eighteenth-century position where language is itself seen as an ana-
lytical tool.

Traditional grammatical theory founded upon the concept of the
word-classes continued to influence and indeed to direct the efforts of
the grammarians of the sixteenth century. They worked essentially with-
in the closed system of thought that a word-class system imposes in that
it represents an analytical method in search of an epistemological foun-
dation. In order to become a linguistic theory, word-class theory re-
quires the added dimension of a well-founded metatheory. The sixteenth
century sought this basis in the concepts of *ratio* and *causae* placing
these by and large within the capacities of the human mind. But their at-
tempts were essentially *a posteriori* rather than *a priori*, representing a
justification rather than an explanation, an attempt to graft something
possibly new onto something undeniably old. In itself, this is not a criti-
cism of their methodology, but given the constraints that a word-class
approach imposes, it meant that the novel insights that the sixteenth

century produced were largely random and fragmentary. The answers that they provided to link the complexity of meaning to the relative simplicity represented by the word-classes proved at most adumbrations of what were to become metatheoretical concepts only in the seventeenth and eighteenth centuries.

The seventeenth and eighteenth centuries

In England, the seventeenth century's interest in the problems of language is dominated by the Bacon/Hobbes/Locke views that characterize and determine the concern of the Royal Society with the problems of ordinary language applied to philosophical and scientific endeavours. Natural language is seen as posing problems for science not only in terms of its origin in the private language of individuals but also in terms of its own inherent ambiguities, inconsistencies and redundancies. It is these perceived 'weaknesses' that led to the interest in language planning and in the elaboration of a *characteristica universalis* as a *lingua franca* of scientific undertakings. The approach to the establishment of a *characteristica universalis* characteristically reverses the grammatical approach to the problems of language. Content is given priority over expression for it is in expression that the weaknesses manifest themselves. Indeed, expression is to be formulated in some language-neutral 'matter' — symbols or artificial language. The basis of the language in content derives from an analysis and classification of reality apperceived as facts, things or notions. In short, it is an epistemological framework, a prior analysis of man's knowledge to which form is to be attributed. Much of the work, as for example in John Wilkins' (1614-72) *Essay towards a real character*, therefore consists of establishing taxonomies of knowledge, a classificatory statement about ideas rather than about words. However, such an approach also eventually butts up against the problem of syntatic meaning and the way in which this is to be encoded. Wilkins attempts to resolve the problem in terms of a word-class system (that is by means of morphological markings) rather than in terms of a syntactic model.

Wilkins establishes two classes of words — the Integrals and the Particles; integrals encode 'things and notions' — substantives and adjectives and the forms derivable from substantives (consequently regarded as radicals) in terms of added markings for the concepts of concrete as opposed to abstract, for adjectival as opposed to adverbial function and for whether each of these is to be interpreted as semantically neuter, active or passive. Wilkins therefore creates the possibility of eighteen sem-

antically coherent and morphologically-differentiated derivable forms based upon a radical. These include verbs inasmuch as he too reduces the verb to the copula plus adjective; the copula is itself placed with the non-referential particles (pronouns, prepoisitions, non-derivative adverbs, conjunctions).

The interest of this approach is not so much in what it achieves or fails to achieve in terms of Wilkin's own objectives, but rather in the way in which it clearly indicates one of the weaknesses of the traditional word-class approach. Taking as an example his often-quoted analysis of the concept 'heat', Wilkins system permits eighteen derivable semantic complexes to which form is then attributed. The terms include the following:

Caloritative:	abstract, neuter, adjective
Calefactive:	abstract, active adjective
Calefactible:	abstract, passive, adjective
Caloritatively:	abstract, neuter, adverb
Calefactively:	abstract, active, adverb
Calefactibly:	abstract, passive, adverb

These English forms are, of course, mere representations (and therefore some of them are nonce occurrences) of what the universal character must represent symbolically. The analysis is essentially an attempt to represent within the confines of a single morphologically complex form ideas that natural language would normally represent paraphrastically, that is to say, by 'any number of words put together.'

Wilkins' approach and that of the traditional grammarian illustrate the essential irreconcilability of the problems faced by a word-based semantics; the open-endedness of semantic concatenation to create what the eighteenth century would call "le monde du pur possible" is irreconcilable with the necessary finiteness of word-forms. The totalities represented by semantics and by morphologically-contrived word-forms become incommensurate. The combinatory properties of words become essential to the specification of meaning; syntax and not morphology must constitute the primary concern of linguistic theory, and a more powerful device than that provided by the word-based concepts of concord and rection will be necessary. Although this is recognized, whether explicitly or implicitly, by even such sixteenth-century grammarians as Linacre and Sanctius, they as well as the early seventeenth-century scholars lacked the epistemological (or if one prefers, the psychological) framework that would permit them to elaborate a system of *ratio* flexible enough to establish a coherent explanatory principle that would liberate their use of the word-class analysis from the inherent constraints that tend to re-

duce it simply to a descriptive device.

The major breakthrough in resolving this epistemological impasse came in France with the Port-Royal *Grammar* and *Logic*. The *ratio* long acknowledged to underlie and to account for languages was given form in a complex of logical and psychological concepts elaborated upon the Cartesian triad of *concevoir*, *juger* and *raisonner*. The first two of these permit the dichotomization of the word-classes into those representing the 'objets de nos pensées' and the 'manières de nos pensées' thereby relegating formal characteristics and ontological features to a secondary status and to the role of subclassification. By appealing to the concept of the judgement, the *semantic totalities* — the logical propositions and their parts — now become a central concern to be specified in propositional terms — subject, affirmation, attribute — and not in the primary terms of word-classes. The thoughts that language manifests, even where these appear under the guise of discrete words and word groups as opposed to 'complete' propositions are now specifiable within a metalinguistic framework that acknowledges the necessity of "any number of words put together to signify one thing." The proposition — the essential manifestation of the act of judgement that affirms an attribute of a subject — becomes an explanatory device that can account for semantic totalities smaller than the sentence but larger than the word. The organization of content in terms of simple and compound subjects and attributes is differentiated from the organization of expression in terms of complex and non-complex forms. During the eighteenth century such scholars as César Chesneau Du Marsais (1676-1756), Nicolas Beauzée (1717-89) and Etienne Bonnot de Condillac (1715-80) manipulate the logical concept of comprehension and extension to permit the elaboration of a theory of semantic complementation via the concepts of identity and determination which themselves then furnish the explanation of the grammatical concepts of concord and rection. If the content of propositional forms represents a concatenation of ideas, words themselves are seen as an addition of ideas. By the middle of the eighteenth century, the word-classes are envisaged as collections of semantic and grammatical features both of which represent a combination of principal and accessory ideas; morphological categories are no less ideas than are the features that constitute the lexeme itself. The notional, ontological, epistemological and formal criteria that had for so long provided the basis for establishing word-classes are all subsumed by the higher category of ideas. The essential dichotomization is not of the word-classes themselves but of ideas to give the *idées objectives* and the *idées formelles*. The *idées objectives* — the semantic primes into which lexical items are in theory analyzable — combine to reflect or manifest totalities

(words, word groups) that are themselves semantically absolute or relative, determinate or indeterminate with regards to reference, and determinable or non-determinable in terms of their semantic modifiability. Judgement and propositional form combine to give semantic form which the utterance (in its complexity or non-complexity) encodes. A distinction is now possible between propositional content and propositional form, that is, between what was to be called the *proposition logique* and the *proposition grammaticale*. Content and expression are no longer bound in the one-to-one relation that a word-class analysis implies and that the concepts of concord and rection alone relate. Nominal groups, nominal clauses, relative clauses are all reducible to the subject, copula, attribute of propositional form. Word-classes and word groups are established in terms of their ability to fulfill abstract propositional roles in that they represent open or closed semantic complexes requiring or simply permitting some form of complementation. Alternatively, they act as quantifiers and abstract relations dependent on the concept of determination.

Irrespective of the particular psychological foundation upon which the logical proposition is based within the general grammars — that is, whether it stems from a Cartesian or Lockian epistemology, from an analysis of thought or from a synthesis of experience, the framework for establishing the difference between syntax and construction is furnished, with syntax presenting the language-universal and construction the language-specific. That the eighteenth century argues at great length over what constitutes natural order and inversion — with arguments stemming from different accountings of cognitive and historical processes and from differing views of the communicative basis of language (for example, whether it is rationally, perceptually, or affectively motivated) — is not in itself of great importance in terms of the principles that are adduced to account for the eventual order of words in the utterance. These are the concepts of ellipsis and transposition and they are uniquely the contribution of the grammarian. It is the grammarian who furnishes the linguistic principles by which the abstract semantic formulations of the philosopher are to be related to the empirical facts presented by the utterance. In short, it is the grammarian who is finally called upon to account for the data and to ensure that there is some principled way of reconnecting with the data.

In the eighteenth century as in the sixteenth, the concept of ellipsis finds its basic justification in the status of the verb *esse* (ascribed either an affirmational or existential role) and in the assumption that all verb forms are reducible to *esse* plus some specification of lexical content. But there is a great difference in the way in which the concept of ellipsis

is manipulated in the sixteenth and eighteenth centuries. Thus, in both
Linacre and Sanctius, it appears to be understood as some inherent prop-
erty of the word-classes themselves. Both Linacre and Sanctius devote
a considerable proportion of their grammars to listings of the possible
ellipses of specific lexical nouns, verbs, prepositions, etc. In short, there
is a tendency, certainly in Linacre, to treat ellipsis not as an essentially
syntactic phenomenon, but as a word-class phenomenon; and it is the
principles of concord and rection — and the violations of these prin-
ciples — that require the explanation provided by ellipsis.

In the eighteenth century, ellipsis relates the abstract structures repre-
sented by the *proposition logique* and the *proposition grammaticale* to
the utterance. It is therefore a relation that holds between the syntax of
ideas and the syntax of words; the word-classes play a mediating role
and the unity of the idea stands in no necessary one-to-one relation with
the unity of the word. The complex forms of the utterance, the groups
of words that signify what is a single semantic unit, are dependent upon
a semantic organization stemming from the act of judgement — that is
the process of predication. Ellipsis therefore represents a process of sim-
plification that accounts not only for the apparently anomalous surface
structures (for example, an adjective appearing to function as a noun)
but for *all* surface structures inasmuch as even the simplest of canonical
forms relies upon the process of ellipsis. Complex grammatical struc-
tures are now open to an hierarchical analysis specifiable in terms of the
differences between logical subjects and attributes and grammatical sub-
jects and attributes which do not necessarily stand in a one-to-one rela-
tion. Individual lexical items may well be the signs of total ideas, but
they are only one of the manifestations of total ideas. Morerover, the
word as a semantic totality — as a loosely circumscribable and delimita-
ble unit — now permits the concept of a variable role in the formulation
of meaning. Thus, if a word is defined, in the abstract, as representing a
total idea, the functioning word may itself represent a partial idea — an
idée intégrante in a higher-order semantic and grammatical unit. Words
and word-classes cease to be monolithic entities required to account, in
and of themselves, for all aspects of linguistic formulation and function.
The philosopher — in providing the formulations of the logical proposi-
tion — liberates the word-classes by furnishing a psychological basis as a
metatheoretical alternative to the ontological and epistemological foun-
dations upon which the theory of word-classes evolved.

The grammarian profits from this liberation to reanalyze and reclassi-
fy the word-classes. The adjective (because of its attributive function)
can now be distinguished from the noun substantive; the logical role of
articles in the function of determiners, the anaphoric status of pronouns

and the conjunctive role of relative pronouns each becomes specifiable at the appropriate level of the logical and grammatical proposition. It becomes possible, as does Condillac, to reduce the inventory of the word-classes to four — nouns and adjectives as the objects of thought, and the verb *être* and prepositions as their relators.

This divorce of the semantic and grammatical levels of organization has both positive and negative effects both for semantics and for grammar. The appeal to ideas which are themselves seen as being principal or accessory and as embodying both semantic and grammatical information allows the grammarian to at least adumbrate the componential analysis of meaning of specific lexical items. The semantic communality of verb and noun in such forms as *amour* and *aimer* can be treated separately from the *idées formelles* which specify their word-class membership. The need or the ability of specific lexical items to be complemented lays a new foundation for grammatical function. Interrogative, imperative and optative sentences can be accounted for in terms similar to the modern postulation of underlying performative verbs. On the other hand, while the encoding of the utterance has become a matter of item and process rather than item and arrangement, the need for decoding (and the recoverability of the logical proposition) once again, as in Sanctius, relies on the simplistic and unnecessary view (propounded, for example, by Beauzée) that lexical items can not belong to different word-classes. Furthermore, the manipulation of the concepts of simple and compound content as opposed to non-complex and complex forms fails to permit complex realizations to be treated as words. Thus, *à l'égard de* can not be treated as a single lexeme classified as a preposition but requires to be broken down into its constitutent parts. In moving from an item and arrangement analysis based upon word-classes related via the concepts of concord and rection to an item and process analysis based upon word-classes related ultimately in terms of complementation and of identity and determination, generality is achieved at the semantic level but lost at the grammatical level. In short, the logical proposition furnishes greater 'chunks' of organized meaning whose accounting requires a more powerful model than the simple 'parsing' that the traditional word-class analysis supplies.

In England, this concern with higher-order semantic units larger than those embodied in the concept of the word gives rise to at least two distinct approaches. James Harris (1709-80), for example, establishes an initial dichotomy of word-classes based on a semantic criterion to give Principals and Accessories (having or not having meaning in isolation). The traditional word-classes are then subsumed by the categories of Substantive and by the functions of Attributive, Definitive and Conjunctive.

The analysis permits him to establish a difference between first and second-order attributives — that is, adverbs modifying verbs and adverbs modifying other adverbs and adjectives. In essence, "numbers of words put together to signify one thing" embrace semantic entities other than the noun and verb groups.

John Horne Tooke (1736-1812), on the other hand, with his 'etymologizing' approach, adopts an historical perspective and attempts to derive all word-classes and all meaning from the noun and the verb. To do this he employs the principle of 'abbreviation' — an idiosyncratic manipulation of the concept of ellipsis — with the semantic and grammatical specification of meaning depending on *ad hoc* paraphrases independent of the grammatical constraints that the form of the utterance or surface structure normally impose upon the reconstruction of elliptical forms.

Conclusion

From the early sixteenth century there are adumbrations of the difference between the structure of thoughts in the mind and the structure of the utterance. Substitution of forms — preposition and noun to replace adverb — commutation of forms — adjective for adverb — the anomalies of the inappropriate uses of word-classes and case-forms, the postulation of the verb substantive as basic to all verb forms, all these represent concepts that conflict with the monolithic and inviolable roles which a word-class analysis implies.

For whatever reason, — simple tradition, methodological convenience, the lack of methodological alternatives — the word-classes continue through the seventeenth century to be the basic and primary elements of grammatical theory. The attempts to justify their necessity and to define them range over ontological and epistemological criteria as they had done since the time of Aristotle. It is only in terms of Lockian and Cartesian psychology that the word-classes find a more or less intralinguistic basis permitting an internal justification so that they form part of a theory of language rather than simply of a grammatical theory. Grammatical theory (based upon the concept of word-classes) takes on the status of a linguistic theory (in which the concept of word and word-class plays the role of a methodological construct).

The philosopher liberated word-classes from their methodological strait-jacket; the grammarian furnished the linguistic concepts to establish the link between logical and grammatical formulation, between logical proposition, grammatical proposition and utterance and thereby

freed the word-classes from their item and arrangement role. Although the word-classes persisted as essential elements of analysis, their monolithic role changed and the restricting belief that total thoughts are represented either in words or in sentences with no intervening — or indeed higher — levels of construction loses its force. The philosopher provides new and reasonably well-formulated bases and the grammarian profits from an empirically-based analytic methodology; together these permit the canonical forms of grammatical description to include "any number of words put together to signify one thing". But the word-classes themselves may be seen as having represented an inhibiting factor in this evolution, so the grammarian rode on the coattails of the philosopher in his attempt to reconcile the irreconcilable — that is, the open-endedness of semantic concatenability in the realm of discourse and the finiteness of form on which the concept of the word and of the word-classes depends. The concept of ellipsis, variously manipulated, together with that of transposition, may be viewed as representing the grammarian's principal *grammatical/linguistic* contribution towards the elaboration of a model to account for the asymmetry of content and expression.

REFERENCES

Arnauld, Antoine and Claude Lancelot. 1966 [1676]. *Grammaire générale et raisonnée*. Grammatica universalis 1, ed. H. E. Brekle, Stuttgart-Bad Cannstatt: Friedrich Frommann.

Auroux, Sylvain. 1979. *La Sémiotique des Encyclopédistes*. Paris: Payot.

Beauzée, Nicolas. 1974 [1767]. *Grammaire générale, ou exposition raisonnée des éléments nécessaires du langage, pour servir de fondement à l'étude de toutes les langues*. Grammatica universalis 8, ed. H. E. Brekle, Stuttgart-Bad Cannstatt: Friedrich Frommann.

Breva-Claramonte, Manuel. 1983. *Sanctius' Theory of Language: A contribution to the history of Renaissance linguistics*. Amsterdam: John Benjamins.

Chevalier, Jean-Claude. 1968. *Histoire de la syntaxe*. Geneva: Droz.

Condillac, Etienne B. de. 1947. *Oeuvres philosophiques*. Vol. 1, ed. Georges Le Roy, Paris: Presses Universitaires de France.

Harris, James. 1751. *Hermes or a Philosophical Inquiry Concerning Language and Grammar*. London: T. Bolas.

Hobbes, Thomas. 1981 [1668]. *Computatio sive logica*. Trans. A. Martinich, New York: Abaris Books.

Land, Stephen K. 1974. *From signs to propositions. The concept of form in the eighteenth century*. London: Longman.

Linacre, Thomas. 1524. *De emendata structura Latini sermonis libri sex*. London: Apud Richardum Pynsonum.

Michael, Ian. 1970. *English Grammatical Categories and the Tradition to 1800*. Cambridge: Cambridge University Press.

Padley, G. Arthur. 1976. *Grammatical Theory in Western Europe 1500-1700: The Latin Tradition*. Cambridge: Cambridge University Press.

Rosiello, Luigi. 1967. *Linguistica illuminista*. Bologna: Il Mulino.

Tooke, John Horne. 1798. Επεα πτερόεντα *or the Diversions of Purley*. London: J. Johnson.

Sanctius, Franciscus. 1562. *Minerva seu de linguae Latinae causis et elegantia*. Lugduni: Apud Haeredes Seb. Gryphii.

Scaliger, Julius Caesar. 1597. *De causis linguae Latinae libri tredecim*. Heidelberg: Apud Petrum Santandreanum.

Wilkins, John. 1668. *Essay towards a Real Character*, London: printed by J.M. for S. Gellibrand and J. Martin.

THE LEIBNIZIAN *CHARACTERISTICA UNIVERSALIS* AS LINK BETWEEN GRAMMAR AND LOGIC

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If one wants to speak about the relationship between logic and grammar in Gottfried Wilhelm Leibniz's (1646-1716) thinking then it will be useful to look for a science which comprehends them both. Such a science is provided in the form of the *characteristica universalis*, that is to say, the Leibnizian general theory of signs, for both grammar and logic are branches of this general theory of signs and are explicitly conceived as such by Leibniz. Now this *characteristica universalis* is by no means a Leibnizian invention or discovery. It was rather a general desideratum of the science of the seventeenth century — a century in which a whole series of sign-systems were projected (and also rejected). One can indeed describe the project of a general theory of signs as an intellectual commonplace of the period (Cohen 1954: 49).

Leibniz referred to it as *ars characteristica* or combinatoric sign-technics, but also as *characteristica generalis seu rationalis*, *Spécieuse universelle ou générale*, *combinatoria characteristica*, *Caractère universel* and *doctrina de Formis abstractae animo*. As these designations will indicate, the characteristic is on the one hand *techné*, *ars*, art, skill or capacity, namely the art to find the right signs and to operate with them — i.e. to apply them — in an appropriate way. And on the other hand it is also a science and as such a branch of metaphysics. It is defined by Leibniz as "the science of forming and ordering signs in such a way that they reproduce thought-contents. Which implies that they stand to each other in the same relation as the contents of thoughts"[1]

The three Aspects of the Characteristica Universalis: Syntax, Semantics and Pragmatics

The characteristic has a *syntactical*, a *semantical* and a *pragmatical*

aspect and is thereby identical with modern semiotics with its branches
of syntax, semantics and pragmatics — today's *trivium*, as it has been
so rightly called by Richard M. Martin (1986: Preface) as substitute for
logic, grammar, and rhetoric.

If one investigates the different functions which may be exercised by
signs, then one can say that syntax corresponds to the *inferential*, se-
mantics to the *referential* and pragmatics the *communicative* function
(Burkhardt 1980: 182, 189-90).

There are three historical sources for the syntactical aspect of the
Leibnizian characteristic: the combinatorics of Raimundus Lullus (1235-
1315) and his disciples, the algebra of François Viète (1540-1603), and
the tradition of rational grammar which had grown up since the *techné
grammatiké* of Dionysius Thrax (*fl. ca.* 100 BC), that is to say, the
analysis of natural languages (Burkhardt 1980: 83ff., 190f.).

Syntactic Analysis of Natural Language

In this paper I do not want to consider the Lullian tradition or the
Viëta algebra, but turn immediately to the third ingredient of syntax,
namely the Leibnizian conception of the analysis of natural languages. It
is very important to assert from the start that natural or ordinary lan-
guages are for him systems of signs — indeed they represent the lowest
level of characteristics, standing beneath the complete characteristic,
which would directly depict the simple ideas or concepts and the so-
called regional or domain characteristics such as that of geometry or the
infinitesimal calculus. Leibniz speaks of natural language as a *characte-
ristica verbalis* (cf. Poser 1979: 314f.).

Leibniz' work on a *general* or *rational grammar* consists in attempts
to construct a rational or philosophical language (a *lingua rationalis* as
he also called it). A necessary presupposition thereof is the simplifica-
tion of the grammar of a historical language, for which purpose Leibniz
selected Latin. According to Leibniz this simplification should be effect-
ed in two stages. The first consists in the purification of the language of
anomalies, either via paraphrases or, where these are not available in the
language, by definitions.[2] Leibniz supplies an example of this process
(GP VII: 38; Dascal 1971: 289-90).

In a second step the superfluous portions of the grammar are elimin-
ated. Thus for example inflexions or case-endings can be replaced by
prepositions. This replacement, too, is based on operations of paraphras-
ing or introducing definitions. In this way a whole series of grammatical
categories can be dispensed with (Burkhardt 1980: 92; Heinekamp 1972:

455). This analysis yields up the fundamental relations occurring in the language and thereby also its rational grammar.

Further analyses are then necessary for the construction of a rational language, for which one must turn to a third stage of analysis of words. The goal of this analysis is a list of the primitive terms or ultimate units of meaning in the language, units which are incapable of further decomposition by an analysis of meanings. Leibniz conceives the so-called radicals (root words) as the ultimate elements of meaning in the language (in detail in Heinekamp 1976: 544ff.; Poser 1979: 318). Once these have been fixed, there then come the other formations of the language (AL: 351-54; Burkhardt 1980: 90).

With this we have reached the final stage of the analysis of language. Once it is reached then composite linguistic formations can once again be produced with the aid of a *synthetic-progressive* process. The result of this synthetic process is the *lingua rationalis* (Burkhardt 1980: 92).

Leibniz attempts through these analyses and through subsequent synthesis to obtain sentences having the structure 'A est B', that is to say, sentences in which there occur two terms, namely subject and predicate, and the copula. The two terms stand for the subject and the predicate of the sentence; they are names for individuals or universals. The copula *est* expresses the different relations between the terms, for example by being supplemented by prepositions such as *in* or *cum* or by the one-place functor *non*, which yields the negation of these relations. Thus for example we have 'A inest B' and also 'A non inest B' (Burkhardt 1980: 114f., 117).

The analysis of natural language thereby leads to two kinds of syntactic formation: to categoremes (terms: subject and predicate) and to syncategoremes (conjunctions, quantifiers). The former represent the matter of the proposition, the latter represent its form.[3] Synthesis can now allow either elementary sentences such as 'A est B' or sentences of more complicated varieties.

Thus Leibniz applies for the simplification of languages both the analytic-regressive and the synthetic-progressive method. And it follows from what has been said that he uses both syntactic and also semantic analyses and syntheses in order to arrive at the simplest structures of the sentence.

Semantics

From the *semantic* point of view, now, the Leibnizian *characteristica universalis* rests on the *alphabet of human thoughts*, on the *encyclopedia*

and on the *Scientia generalis*. It is to be stressed that Leibniz, like Aristotle and the Scholastics, defends the conception of a three-place semantics, marked by the relations of *word, concept* and *idea (vox-intellectus-res)*. [4]

The Alphabet of Human Thoughts

In his conception of the characteristic Leibniz follows to a large extent the Cartesian tradition insofar as semantics is concerned. Réné Descartes (1596-1650) had expressly affirmed that the presupposition of a characteristic would be *true philosophy*. This true philosophy can come about in its turn only when a certain quantity of exactly defined concepts are given. The beginnings of such a preliminary to a general characteristic are to be found in the work of Francis Bacon (1561-1626), who himself conceived a *Begriffsschrift*, and they are to be found also in Johannes Heinrich Alsted (1588-1638) and above all in Joachim Jungius (1587-1657) (Burkhardt 1980: 186f.). Jungius called this preliminary analysis the *protonoematica* and Leibniz was so impressed by Jungius' analyses that he expressly affirmed in a letter to Johannes Vagetius (1633-91), Jungius' literary executor, that he had already conceived his own idea of the non-decomposable concepts before he had come to know of the achievements of Jungius in this field (Burkhardt 1980: 195; A: II. I. 497).

And here Leibniz is speaking the truth, for the idea is mentioned already in the *Dissertatio de arte combinatoria* (= DAC) of 1666. In his later life he concerned himself with the composition of concept-definitions above all in three distinct phases. His more than 20 attempts in this area derive primarily from the years 1676-86, 1688-89 and 1703. Interestingly, he arrives at simple concepts normally not through intensional analysis of complex concepts, but through the extensional partition of what exists. This is not to be wondered at, however, since his attempts deal first and foremost with empirical concepts (Schepers 1966: 555).

He assumes initially that the number of simple concepts is finite — as for example in the DAC of 1666. Later, however, he sees it as infinite, thus the qualities which are perceived through the external senses are infinite in number, since each, insofar as they are distinct from one another, falls under a different concept. For this reason he makes it his policy in the years 1687-89 to take as his foundation no longer the *notiones absolute primae*, the absolutely primitive concepts, but rather the *notiones quoad nos primae*: those concepts which are primitive for us. These latter are introduced by pointing to examples, i.e. through what

one would today, after Russell, call 'ostensive definition'. They are not capable of being further clarified by definitions of the conceptual sort. Thus our experience puts at our disposal a *molecular* and not an *atomic* structure of concepts. The simplest concepts are so important for the constitution of the Leibnizian *characteristica universalis*, because the latter is a *Begriffsschrift*, i.e. its characters should represent concepts and not the things themselves. Only secondarily will they represent the things through the concepts (Burkhardt 1980: 196, 165).

Leibniz saw very quickly that his idea of an alphabet of human thoughts had been too ambitious. Already in Paris, that is around 1676, he speaks of the more modest desideratum of a *catalogue* of human thoughts. And he restricted also the postulate of a true philosophy. He conceives now only of a *cursus mathematicus* as presupposition for the characteristic. Thus the minimal knowledge required for a characteristic is mathematical — whereby Leibniz probably had in mind the basic numerical operations of arithmetic (Burkhardt 1980: 197).

It has sometimes been affirmed that the Leibnizian idea of an alphabet of human thoughts derives from Aristotle. But this is true only to the extent that Leibniz was influenced along these lines by his reading of the Aristotelian *Categories* in his youth. For this reason also he refers to the categories or 'predicaments' as classes of simple concepts. The decisive impulse towards the development of a material constitution system however did not come from Aristotle: the idea is indeed fundamentally quite un-Aristotelian, for Aristotle never conceived the task of developing a material concept-system — instead he put forward the categories as disjunctive classes. It is rather the Lullian tradition, with its basic combinatorial attitude, and the influence of thinkers such as Petrus Ramus (1515-72) and Jungius, which exerted a decisive influence on Leibniz' thought in this connection (Kauppi 1960: 109; Burkhardt 1980: 197-98).

Semantics and the Encyclopedia

The characteristic was meant, in effect, to comprehend the *encyclopedia*:

> The characteristic which I have before me requires nothing other than a sort of encyclopedia (GP: VII. 40).

The transition from an alphabet of human thoughts to the encyclopedia signifies at the same time the passage from concepts to statements. In a letter to Magnus Hesenthaler (1621-81) from the year 1671 Leibniz

describes the encyclopedia as a system of all true and useful statements which were hitherto known, i.e. all scientifically non-trivial and practically usable propositions. These propositions are, according to the character and structure of the corresponding discipline, either singular or general. Some singular propositions have the character of generality — as, for example, astronomical statements about the heavenly bodies. There are also general propositions which comprehend those which are singular — namely all those propositions which are won by induction.

One can see from the programme of the encyclopedia that Leibniz has in mind the ideal of an encyclopedia with an *axiomatic* structure. It is for this reason that he employs the expression 'demonstrative encyclopedia', that is, he awards a privileged status to the synthetic or theoretical ordering of statements. In this form of ordering the statements are arranged on the basis of their logical dependence: every statement stands after those on which it logically depends. It is for this reason also the the mathematical disciplines, and especially geometry, are models of what a science should be, and Leibniz is of the opinion that also everything else can be formulated in definite theses and unequivocal statements after the fashion of mathematics. For this reason also the ordering of the theses in the encyclopedia shall itself be a mathematical ordering — though distinct from that of Euclid, which was insufficiently rigorous (Burkhardt 1980: 198-200).

Couturat has remarked in this connection that still at the end of his life Leibniz was convinced of the possibility of a demonstrative encyclopedia (C: 175). In his last drafts of the encyclopedia, however, he no longer conceived it in its full extensiveness, and believing rather that it would be sufficient if it contained merely the principles of the sciences. He called the science which would establish these principles first of all — in echo of Descartes — the *Scientia universalis* and then later the *Scientia generalis* (GP: VII. 45 and 168; Kneale 1962: 331).

Semantics and the Scientia Generalis

As late as 1696 Leibniz had still conceived the *Scientia generalis* as the science of the thinkable in general (*vom Denkbaren überhaupt*), of the thinkable in so far as it is thinkable. R. Kauppi has pointed out that around this time the analysis of what is thinkable takes the place of grammatical analysis in Leibniz' work (Kauppi 1960: 25-26). Parallel to this turn, the striving for a *characteristica verbalis*, i.e. for a sign system for a rational grammar or a *lingua rationalis*, gives way, in the logical fragments, to attempts to construct a logical calculus.

The object of the *Scientia generalis* is therefore the thinkable, both the simple thinkable (*simplex cogitabile*) and the composite thinkable (*complexum cogitabile*). Thus it comprehends both concepts and statements, the latter including also inferences and compounds of inferences. And because Leibniz identifies the thinkable with the possible in the sense of the consistent or contradiction-free, the task of the *Scientia generalis* consists in fitting out the sciences with consistent concepts, for it is not just any concepts which should be allowed to be applied in the sciences, but only concepts which are possible in the sense that they are free of contradiction (Schneider 1974: 62). This characterisation is fundamental also for the Leibnizian conception of the modal calculi. It derives from an analysis of Thomas Aquinas (1225-74) (*Summa Theologiae* I, q.25 a.3) and John Duns Scotus (*ca.* 1265-1308)[5], who to my knowledge was the first to characterize the possible concepts as the contradiction-free and the impossible concepts as the contradictory — that is to say, he formulated the so-called *possibile logicum*.

Starting out from the *possibile logicum* of Duns Scotus Leibniz seeks to make logically precise the modalities as *concepts deriving from reflection about composite concepts* — and indeed with some success. A composite concept is designated as possible, if among its constituent concepts there appears no concept together with its negation. If this condition is not fulfilled then Leibniz speaks of an impossible concept. Formally:

$$PA \quad =:_{Def.} \ \neg V_B A \sqsupseteq B \ \& \ A \sqsupseteq \neg B$$
$$\neg PA \quad =:_{Def.} \ V_B \ A \sqsupseteq B \ \& \ A \sqsupseteq \neg B$$

One arrives at such possible concepts either through a complete analysis of a composite concept in all its constituent concepts — something which is very rare or indeed not possible at all — or through deduction from reality to possibility, i.e. through application of the modal descent ($p \rightarrow Pp$). The latter applies, of course, only to statements, though as we shall see shortly, one can according to Leibniz always go over from composite concepts to corresponding statements.

Scientia Generalis as Combinatoric of the Terms of Elementary Sentences

Scientia generalis is intended to supply the sciences with contradiction-free, i.e. possible concepts and with true statements — and here the primary object of the Leibnizian logic is the concept and not the statement. Because concepts can be possible or impossible but not true or

false, Leibniz requires a method which enables him to go from concepts to statements and back again. This method presupposes a quite specific predication-structure — and therewith also a formulation of the fundamental statement 'A est B' (for example 'Socrates est homo') — which will enable a transformation of this sort. This proposition contains three elements: subject, predicate and copula, and it can be parsed in different ways:

I.   (Socrates) est (homo) (Two Names Theory)
II. Socrates (est homo)   (Frege's Theory)
III. (Socrates est) homo   (Participation Theory)
IV. (Socrates homo) est   (Leibniz' Theory)

I want briefly to discuss these four possibilities, each of which has played its own particular role in the history of logic and linguistic analysis. [6]

In case (I), the subject and predicate are homogeneous. Both serve a referential function, since the name 'Socrates' refers to the corresponding individual, and 'homo' refers distributively to every individual of the species *man*. The sentence is also convertible — a fact which has been decisive for the development of a syllogistic. Transitivity, too, can be formulated without further ado. It is for this reason that this sort of parsing or partition has been preferred by the Scholastics, as also by Leibniz, for it was important to both that it should be possible to go over from representation to inference, i.e. to go from the referential to the inferential function of word-signs. Leibniz expressly postulated this property for his *characteristica universalis* and he had prepared the ground for it also in his grammatical analyses (Burkhardt 1980: 173f., 332f.).

Possibilities (II) and (III) are partitions which yield heterogeneous elements: thus possibility (II) will recall the standard Fregean form of predication — i.e. the relation between a saturated expression (Socrates) and an unsaturated expression (homo). If the latter is correctly applied to the former, then the corresponding statement is true: the *application* of a concept to an object yields a truth-value. By this means Gottlob Frege (1848-1925) introduces to logic the concept of a function (Frege 1891: 1ff.; Angelelli 1967: 172ff.). This form of predication is quite alien both to the scholastics and to Leibniz — although the contrary is repeatedly affirmed (see for example Jacobi 1980: 165ff.). For statements of this form are not convertible, and further they do not allow the formulation of the principle of transitivity:

A (est B), (est B) C → ?

In the case of form (III), here the individual Socrates would be a part of the universal homo. This formulation, too, leads to heterogeneous formations and is for this reason also non-convertible. In the forms (II) and (III) the predicate is one level higher than the subject. Since conversion and (in case II) transitivity are not capable of being formulated, neither case enables the construction of a syllogistic.[7]

The possibility of partition which is most important for Leibniz, and therefore also for us here, is represented in (IV). This leads to the form 'AB est' — or also to the form 'AB est ens' — that is: the composite concept 'AB' is affirmed to be possible, or: its object is affirmed to be existent, and therefore also, indirectly, to be possible (because it is real). Consider, for example, the concept 'homo animal'. This concept is possible or consistent, since *man* contains *animal* as part of its intension (Burkhardt 1980: 131 f.; Burkhardt 1983: 278). The formulation 'AB est' has been known since the *De interpretatione* of Aristotle (*De int.*, 19b 18) and is referred to by the Scholastics as 'de secundo adjacente', i.e. as the proposition of secondary addendum, in contradistinction to the propositions of tertiary addendum or 'de tertio adjacente', which correspond to our form (I). This terminology is to be found already for example in Peter Abelard (1079-1142) (Abelard 1970: 135, 161), and it is adopted by Leibniz. The possibility of reciprocal transformation of the two forms (I) and (IV), i.e. the possibility of obtaining each from the other, is normally rejected by the scholastic philosophers.

From these examples it becomes clear that inferring has to do with referring, i.e. that certain inferences are possible or impossible because of the referring relations of the terms in the relevant sentences.

Leibniz's Solution

Quite different is the case of Leibniz. As a logician of the concept he is searching precisely for a formulation of the four categorial sentence-forms which will enable the given transformation. And indeed he finds it, after a considerable search. The four categorial sentence-forms then have the following forms:

(A)	'A non B'	non est res (ens)	$\neg P(A\bar{B})$
(I)	'AB'	est res (ens)	$P(AB)$
(E)	'AB'	non est res (ens)	$\neg P(AB)$
(O)	'A non B'	est res (ens)	$P(A\bar{B})$

And if one sets the given formulation of the A-sentences as equivalent with 'A est B', i.e. with the proposition *tertii adjecti*, then one arrives at

the following formula:

$$(A \ e \ B) \equiv (\neg P(A\overline{B}))$$

(where e = est in the sense of 'contains').
The A-form is therefore equivalent to the proposition to the effect that
A together with ¬B is impossibile or inconsistent (A non B non est res).
It is possible then to formulate correspondingly the three remaining cat-
egorial sentence-forms by appeal to the logical square. The resulting
equivalences then enable Leibniz to pass freely backwards and forwards
between propositions of secondary and tertiary addendum (Lenzen
1985).

Now as Frege already recognised, the four categorial sentence-forms
when set out in this way by Leibniz aquire the structure of a rudimen-
tary Boolean algebra. After presenting a number of basic laws of Boo-
lean algebra Frege remarks:

> It is possible to find everything up to this point with only superficial deviations al-
> ready in Leibniz, of whose works in this field however Boole certainly did not have
> any knowledge (Frege 1974: 90).

New investigations by Wolfgang Lenzen of Osnabrück have con-
firmed the validity of Frege's insight, but they have gone still further.
Lenzen has demonstrated — using as his basis the axiomatisation of
Lewis and Langford — that Leibniz had already set forth a complete
axiomatisation of the Boole-Schröder algebra (Lenzen 1984b: 187ff.).

It is clear that in this formulation the assertoric sentences are given a
modal structure, for 'AB est ens' signifies 'AB is possible' and 'AB est
non ens' signifies 'AB is impossible'. Thus even though he developed no
modal syllogistic, Leibniz has, with his concept-logical or intensional in-
terpretation of the four categorial sentence-forms and of the syllogism at
the same time given what is in effect a modal interpretation of syllogistic
logic. Leibniz can therefore also, as Hans Poser has shown, interpret his
calculus of 'entia' in the *Generales Inquisitiones* not only as a concept-
calculus but also as a modal statement-calculus (Poser 1969: 50; Burk-
hardt 1980: 349). The basic calculus of this work is a concept-calculus
with strict implication, equivalent to the Lewis system S2, as Lenzen has
demonstrated (Lenzen 1985).

The just-described reciprocal transformation of propositions of sec-
ondary and tertiary addendum can be applied, according to Leibniz, not
only to essential, necessary propositions, and to finite-analytic proposi-
tions such as 'All men are living things'. It can be applied also to con-
tingent or infinite-analytic propositions such as (to mention Leibniz'
own example) 'All men are sinners'. In this case one infers — again with

the help of the modal descent — from reality to possibility. In the form of the secondary addendum the proposition then reads: 'Man as subjected to the sinner *is*' — where the 'is', here, has the meaning of 'exists' or 'is real' (C: 391-92; Burkhardt 1980: 132).

Leibniz has hereby in fact fulfilled the most important requirement of his *characteristica universalis*. He can go over from representation to inference, from the referential to the inferential function of signs.

It was already intimated — and it is important to repeat this point expressly — that the Leibnizian characterisation of the analyticity of propositions is intensional, i.e. it rests on relations between concepts, namely the relations of inclusion or exclusion. According to Leibniz necessary propositions are *finite-analytic*, i.e. one can show in a finite number of steps of analysis that the predicate-concept is contained within the subject-concept. Contingent propositions in contrast are *infinite-analytic*, i.e. it is possible that infinitely many steps of analysis are necessary in order to achieve the same result as for the finite-analytic propositions. If one can show with the aid of a finite number of steps that the predicate-concept is excluded from the subject-concept, then the statement in question is not purely and simply false, but impossibile. Contingent statements for which the same holds are not however impossible, but merely false (Burkhardt 1983: 277). It is in my opinion of great importance from the historical point of view to point out that the intensional definition of the analyticity of propositions is in fact much older than the consciously extensional criterion preferred, for example, by Quine (Quine 1953: 22-23, 41).

Leibniz on Quantification

By 1679 at the latest Leibniz has modified his elementary sentence 'A est B' through the addition of indeterminate concepts. He normally employs upper-case letters from the end of the alphabet (X, Y,...) or sometimes also from the middle of the alphabet (Q, L,...) for the representation of 'indeterminate' concepts — the determinate concepts being symbolised by the initial letters (A, B, C. ...) The universal affirmative statement of th form 'Omne A est B' is then represented by the condition 'A = BY' (Lenzen 1984a: 1,7).

Now the Latin term for the indefinite quantifier is 'quoddam', i.e. 'some one', 'any one', a term taken over by Leibniz from the scholastics. Among the Scholastics this 'quoddam' was a quite usual quantifier, with whose help one could designate for example an *individuum vagum*, i.e. an indeterminate individual of a species which would possess all the

properties appropriate to this species. Thus a state of affairs might be represented by the sentence 'give me a pencil', i.e. more correctly: 'give me some arbitrary individual of the species *pencil*'. The latter sentence relates to an indeterminate individual or an *individuum vagum*. The corresponding supposition is the *suppositio confusa tantum*. [8]

Leibniz himself did not use 'quoddam' to refer to an *individuum vagum*. Rather he goes one level higher and refers therewith to an indeterminate species of a genus. $A = BY$ then signifies 'homo est animal quoddam', Y standing for the specific difference, which is in this case indeterminate and therefore also expressed with the help of an indeterminate concept (Burkhardt 1980: 326, 347). This sentence can be interpreted quantificationally in two different ways:

1) There is an indeterminate species of the genus *animal* and this indeterminate species is identical with *man*.

Si $A \infty AB$, assumi potest Y tale ut sit $A \infty YB$. [9]

2) All individuals of the species *man* are identical with all individuals of an indeterminate species of the genus *animal*, i.e. the set of individuals of the species *man* is identical with the set of individuals of an indeterminate species of the genus *animal*.

It will be clear that the most important function of the indeterminate concepts for Leibniz is as *hidden quantifiers* (Lenzen 1984a: 8-9). I interpreted these concepts in this way in my book on Leibniz, and a clear very extensive investigation of the whole matter by Wolfgang Lenzen has recently appeared (Burkhardt 1980: 122, 229, 247, 326; Lenzen 1984a).

Lenzen points out the the Y in the following formulae has the function of an existential quantifier, i.e. that the two formulae can be adequately represented with the help of this quantifier, as follows (Lenzen 1984a: 8-9):

$$A \text{ e } B \rightarrow A = BY \qquad A \text{ e } B \rightarrow V_Y (A = BY)$$
$$A \text{ e } B \equiv A = BY \qquad A \text{ e } B \equiv V_Y (A = BY).$$

There are a few passages in which Leibniz expresses these relations almost in the modern sense. One such passage has been cited already; the other reads: Datur Q tale ut QA sit non B (C: 261; Lenzen 1984a: 8-9). With the help of the existential quantifier one obtains the formula:

$$A \notin B \equiv V_Q (QA \text{ e } \overline{B}).$$

Leibniz' use of the *universal quantifier* can best be studied in relation to a definition, the meaning of which, at least, is already familiar, since it concerns the *possibile logicum*: 'Possibile est quod non continet contradictorium, seu A non-A. Possibile est quod non est: Y non-Y' (from

the *Generales Inquisitiones*). The first definition can be formalised as follows:

$$P(A) \equiv A \notni Y\overline{Y}$$

The second definition can be formulated with and without quantifiers:

$$P(A) \equiv Y(A \notni Y\overline{Y}) \qquad\qquad P(A) \equiv \wedge_Y(A \notni Y\overline{Y})$$

From these examples and analyses it will be clear that Leibniz had at his disposal more than just the mere beginnings of a logic of quantifiers. But one must emphasize also that he quantifies over concepts.

Leibniz as Precursor of Anderson and Prior

I should like to point to a further discovery on Leibniz' part, namely to his reduction of the deontic to the alethic modalities, an achievement which is today normally accredited to the logician Alan Ross Anderson in a paper of 1958 (Anderson 1958: 100ff.).

In the 'Elementa juris naturalis' of 1671/72 Leibniz included a table in which the juristic — i.e. the deontic — modalities are related to the alethic. As mediating element he employs the fiction of the good man (*vir bonus*). The table then looks like this (A VI, I: 431-85; Burkhardt 1980: 420f.):

Justum, licitum		possibile	
Injustum, illicitum	est quicquid	impossibile	est fieri a viro bono
Aequum, debitum		necessarium	
Indebitum		omissibile	

And this reduction is then repeated in a letter to Antoine Arnauld (1612-94) from the year 1673, where one finds the two propositions (GP: I. 73-74):

Licitum sit quod viro bono possibile est
Debitum sit quod viro bono necessarium est.

By means of this reduction it becomes possible for Leibniz to handle the deontic modalities just as the alethic. This which is of importance above all in inference with deontic concepts and deontic statements, which can be carried out by analogy with the alethic concepts and statements (Bailhache 1979: 269ff.). This analogy reveals itself also in the fact that Leibniz rejects the modal-peiorem for syllogisms with deontic statements.

The modal-peiorem asserts that in a syllogism with modal propositions the conclusion has the strenght of the weakest premise. Aristotle

rejects this modal-peiorem, holding that a necessary conclusion may follow from necessary and assertoric premises provided only that the necessary premise is the major.

That Leibniz extends this rejection of the modal-peiorem also to syllogisms with deontic propositions has hitherto gone unnoticed. Unfortunately he gives no examples, but a suitable case from the penal law might be:

> One may not cause damage or injury to things which belong to others.
> Your dog is from the point of view of the penal law a thing.
> Thus: one may not cause injury to your dog.

In this case there arises from the statement of a norm and an empirical statement the statement of a further norm.

Inferences of this sort are of central importance in legal theory, a normative science pursuing practical interests. Such inferences make it possible for this science to extend considerably the range of its applications (DLI: 408).

One very important application of Leibniz's reduction of deontic to alethic modalities is to be found later in the *Theodicy*, i.e. in the context of the *theologica naturalis*, a branch of metaphysics. There Leibniz argues that the best of all possible worlds must be derived of necessity from moral and not from absolute necessity. That is, we have to do with a *necessitas consequentiae* $N(p \rightarrow q)$ and not with a *necessitas consequentis* $p \rightarrow Nq$. The premise p is to be sure only morally necessary, i.e. it is contingent; but it converges towards absolute necessity, since for the acting God what is wanted and what is obligatory coincide, that is: what is wise and good he executes with necessity. What holds for the good man holds *a fortiori* also for God. Thereby q also converges to necessity, i.e. the best of all possible worlds is almost necessary, though the opposite is also possible: it is not to be *ruled out*, even if it is extremely unlikely (Grua: 302f., 306, *De Contingentia*).

Leibniz and the Logic of Concepts

Logic, for Leibniz, is the logic of concepts. To show this I shall cite one further passage, in which Leibniz attempts to delineate from each other what he sees as the two most general sciences: logic and metaphysics:

> Let us begin with the most general sciences — whether one calls them 'logic' or 'metaphysics' is for us here of no significance. Just as metaphysics deals with things and there properties in general, so logic deals with concepts in general and with the

truths about them which can be brought into consideration. Still I do not want for this reason to bring these sciences all too close together (Grua: 36).

For the most general science, therefore, Leibniz has two designations: it is either 'Metaphysics' or 'Logic'. Where the former deals with things and their properties, the latter has as its object concepts and truths about concepts, i.e. true statements such as, for example, the affirmation of the consistency or impossibility of composite concepts. Metaphysics — and by this Leibniz here clearly means 'ontology' — is therefore the science which makes assertions about things and their concrete properties, logic the science which makes assertions about concepts and their abstract properties. And because concepts already represent the first level of reflection, that is to say, are predicates of the second order, statements about concepts affirming or denying consistency or possibility to composite concepts — i.e. modal statements — belong to the second level of reflection, and thus they contain predicates of the third order. Thus Leibniz has in effect developed a logic of concepts of second order. In the framework of this logic he is able to represent individual concepts, which he describes as concepts which are *maximally consistent*. Logic is thereby the art of compounding concepts in a consistent manner, or of ascertaining the consistency of concepts already compounded, and of combining together concepts whose consistency has been established. In this sense it is identical with the *Scientia generalis* (Burkhardt 1980: 402).

The Pragmatic Aspect

Both the referential function of signs, which is dealt with by semantics, and their inferential function, the object of syntax, were more important for Leibniz than the *communicative* function. This is understandable, for bound up with the referential function is the function of signs to *constitute thoughts* and to *found knowledge*, and the inferential function is creative, in the sense that it leads to new propositions as theorems. Still there is one goal of the characteristic which relates to the communicative function of signs: the characteristic was meant to serve the role of an auxiliary international language, which would serve the mutual understanding of individuals and nations and also — as Raimundus Lullus had already conceived the matter — the spreading of the Christian religion. In this sense the Leibnizian 'Calculemus' has also a communicative function. This is the *pragmatic* aspect of the *characteristica universalis* (Burkhardt 1980: 189-90).

The Confluence of the Three Aspects: Leibniz's Theory of Truth

There is one theory in Leibniz's work in which all these aspects of the characteristic come together, his theory of truth. Leibniz is an advocate of the correspondence theory, as already were Aristotle and the majority of the Scholastics before him. [10] He was however also the first to have formulated a coherence theory of truth. [11] The correspondence theory is presented most clearly in a work of Leibniz in which he discusses in detail the functions of signs, namely the *Dialogus* of August 1677. The relevant text reads:

> For although characters are arbitrary, their use and connection have something which is not arbitrary, namely a definite analogy between characters and things, and the relations which different characters expressing the same thing have to each other. This analogy or relation ist the basis of truth. For the result is that whether we apply one set of characters or another, the products will be the same or equivalent or correspond analogously. But perhaps certain characters are always necessary for thinking (GP: VII. 192 = L: 184).

If one analyses this passage more closely, one will see that truth rests on three relations, a syntactical, a semantical and a pragmatic relation. The syntactical relation is that between well-chosen signs of a system, both signs which represent and signs which serve a conjoining function. This relation is then to be found once more in a certain relation between the things. The correspondence between sign-relations and thing-relations is called by Leibniz 'proportio'. Proportion is thereby a relation between relations, and is in fact the relation on the semantic level which is crucial for the notion of truth. But because Leibniz defends a triadic semantic theory, he inserts a further level of concepts between the signs and the things. Leibniz discusses this intermediate level also in the *Dialogus* where he talks about the rational and general grammar which is shared in common by all languages and which, as he himself shows in his theory of relations, can be understood as a theory of the relations between concepts. [12] Concepts are the invariants in all languages. According to Leibniz and to the tradition before him, things and their relations are not expressed directly in a language, but only via a system of more or less analysed concepts about them.

Finally, in regard to pragmatics, there is a necessary consensus of human beings concerning the selection of signs, which is never wholly arbitrary but rather proceeds according to quite determinate criteria. It is this consensus which is the first foundation for the pragmatic relation. But there is a further foundation in the relations between different sign-systems, made up of different, though always well-chosen signs, and which express the same relations. Truth, for Leibniz, is then something

which can be expressed *invariantly* through a series of systems made up of well-chosen signs (Burkhardt 1980: 251-52).

Leibniz construes the theory of truth from the perspective of the theory of signs, that is from the point of view of a general characteristic, comprehending both logic and grammar. Regarded as an analysis of natural languages this characteristic can yield — as it has done at least since Aristotle — a picture of the world. Conceived historically, Leibniz' theory of truth can be seen to be indebted to the classical doctrine of proportion, as also to the doctrine of the analogy of proportion which was developed therefrom by the scholastics and made logically precise especially by Aquinas and Thomas Cajetan (1468-1534) (Bocheński 1959: 119; Vuillemin 1967: 13ff.).

In this investigation I have laid particular weight on the semantic aspect of Leibniz' characteristic. This is justified to this extent, that the referential function of signs is clear the most fundamental, serving as presupposition of both the inferential and the communicative functions. It has been shown, that the reference in many cases determines the possibilities of inference, i.e. determines which inference-forms are admissible in any given case. And communication is quite clearly subjugated by reference, for the latter is after all that which determines what it is about which human beings inform or do not inform each other.

NOTES

1) Bodemann: 80-81: "Ars characteristica est ars ita formandi atque ordinandi characteres ut referant cogitationes, seu ut eam inter se habent relationem, quae cogitationem inter se habent". Sigla for Leibniz's works are listed in *References*, A.

2) Cf. Burkhardt 1980: 88f. and Dutz 1984: 44. Dutz draws attention to the unclarity of the concept of anomaly in my book. Unfortunately I could not make it clearer than it is in Leibniz himself.

3) Cf. C: 288: "Vocabula sunt voces aut particulae. Voces constituunt materiam, particulae formam orationis".

4) In this three-place semantics, 'concept' can be understood both as *conceptus subjectivus* (the act of thinking; Leibniz speaks also of *affectus* or *affectio animi*) and as *conceptus objectivus* (the content of a thought). 'Res' can be understood either as *realitas existentialis* i.e. something concrete, or as *realitas essentialis*, i.e. an ideal or mathematical entity or an idea. Schulthess expresses the view that I have imposed this three-place semantics on Leibniz:

> In this way Burkhardt imposes a three-place semantics upon Leibniz and, what is more, describes it as a variation of the scholastic modistic *vox-intellectus-res* se-

mantics deriving from Aristotle (p. 205)

— and he defends this view by appealing to Poser 1979. In fact, however, Poser takes on the very task of defending my thesis (Poser 1979: 312, n. 17, citing Burkhardt 1974). More generally Schulthess criticises me for seeing Leibniz too much through scholastic spectacles (Schulthess 1982: 203). Here he certainly has a point. Were it not for the fact that scholastic spectacles are very good spectacles with which to view Leibniz semiotics: they grant the possibility of seeing more clearly than whith the naked eye. And certainly the scholastic spectacles are much better for this purpose than, for example, Neo-Kantian contact-lenses. Leibniz was never an idealist in the sense of Kant and his successors, and thus he cannot be recruited as a precursor of German idealism, for all the efforts of Ernst Cassirer (1874-1945) and others in this direction. Indeed, towards the end of his life Leibniz once more adopted a position close to that of Aristotle. Reflecting, for example, on his correspondence with Barthulomaeus des Bosses (1688-1738), one might in fact correctly describe him as the most important and systematic representative of protestant Aristotelism. Cf. Hunter 1984: 844.

5) Duns Scotus, *Opus Oxoniense* I dist. 2 q. 7 n. 10 (VIII 529/30). Cf. Deku 1956: 1f.; Burkhardt 1983: 276ff.

6) I owe this analysis to discussions with Carlos Dufour. Cf. Dufour 1987.

7) Transitivity is capable of being formulated for (III):
(A est) B, (B est) C → (A est) C
For example:

   Socrates participates in man
   Man participates in animal
   Thus: Socrates participates in animal

In order to understand such inferences one would need a variety of generic participation. Conversion is not capable of being formulated: (A est) B → ?

8) Ducrot 1976: 212; Burkhardt 1980: 122; Maurizio Ferriani referred to the concept of the *individuum vagum* during my talk in Bologna.

9) C: 235; cf. Lenzen 1984, 1: 9.

10) Leibniz, *Dialogus* (1677) = GP: VII. 190-93; Aristotle, e.g. *Categories* 4a 21f. Cf. Burkhardt 1980: 163. 241.

11) *De modo distinguendi phaenomena realia ab imaginaris*: GP: VII. 319-22.

12) *Dialogus*: "Et hunc ordines variatum quidem in omnibus linguis quodammodo respondere" (GP: VII. 192); cf. Burkhardt 1980: 251.

REFERENCES

A. *Primary Sources*

A   = Leibniz, Gottfried Wilhelm. 1923f. *Sämtliche Schriften und Briefe*. Hrsg. von der Preuss. (jetzt Deutschen) Akademie der Wissenschaften zu Berlin. 14 vols., in 6 Reihen. Darmstadt 1923f, Leipzig 1938f, Berlin 1950f.

AL   = *Analysis Linguarum* = C 351-54.

Bodemann = Bodemann, Eduard. 1889. *Die Leibniz-Handschriften in der Königl. öff. Bibliothek zu Hannover*. Hannover. (Repr. Hildesheim: Olms, 1960.)

C   = Couturat, Louis. 1903. *Opuscules et fragments inédits de Leibniz*. Paris. (Repr. Hildesheim: Olms 1962.)

DLI   = Leibniz, Gottfried Wilhelm. 1960. "De legum interpretatione, rationibus, applicatione, systemate". *Testi per la storia del pensiero giuridico I* ed. by Tullio Ascarelli & Michele Giannotta, 397-410. Milano: A. Giuffrè.

GP   = Gerhardt, Carl Immanuel. 1875-90. *Die philosophischen Schriften von G.W. Leibniz*. 7 vols. Berlin-Halle. (Repr. Hildesheim: Olms, 1965.)

Grua   = Grua, Gaston. 1948. *Leibniz, Textes inédits*. Paris, vols. I-II.

L   = Leibniz, Gottfried Wilhelm. 1969. *Philosophical Papers and Letters*. A selection. Transl. and ed. with an Introduction by Leroy E. Loemker, Dordrecht: D. Reidel.

B. *Secondary Sources*

Abaelardus, Petrus. 1970. *Dialectica*. Ed. by L.M. de Rijk, Assen: Van Gorcum.

Anderson, Alan Ross. 1958. "A Reduction of Deontic Logic to Alethic Modal Logic". *Mind* 67. 100-103.

Angelelli, Ignacio. 1967. *Studies in Gottlob Frege and Traditional Philosophy*. Dordrecht: D. Reidel.

Bailhache, Patrice. 1979. "Un Logicien déontique avant la lettre: Leibniz précurseur de A.R. Anderson et A.N. Prior". *Archiv für Rechts- und Sozialphilosophie* 65. 269-74.

Brekle, Herbert. 1971. "Die Idee einer generativen Grammatik in Leibnizens Fragmenten zur Logik". *Studia Leibnitiana* 3. 141-49.

Bocheński, Joseph M. 1959. "Über syntaktische Kategorien". *Logisch-Philosophische Studien*. Freiburg, 75-96.

——. 1959. "Über die Analogie". *Ibid.* 107-29.

Burkhardt, Hans. 1974. "Anmerkungen zur Logik, Ontologie und Semantik bei Leibniz". *Studia Leibnitiana* 6. 49-68.

——. 1980. *Logik und Semiotik in der Philosophie von Leibniz*. München: Philosophia.

——. 1981. "Skizze der Leibnizschen Theorie der Prädikation". *Studia Leibnitiana Supplementa* 23. 83-93.

——. 1983. "Modaltheorie und Modallogik in der Scholastik und bei Leibniz". *Annuario Filosofico* (Pamplona: Universitad de Navarra) 16. 273-91.

Cohen, Jonathan. 1954. "On the Project of an universal Character". *Mind* 63. 273-91.

Couturat, Louis. 1901. *La Logique de Leibniz*. Paris: Alcan (Repr. Hildesheim: Olms, 1966.)

Dascal, Marcelo. 1971. "About the Idea of a Generative Grammar in Leibniz". *Studia Leibnitiana* 3. 272-90.

——. 1978. *La Sémiologie de Leibniz*. Paris: Aubier.

Deku, Henry. 1956. "Possibile Logicum". *Philosophisches Jahrbuch der Görres-Gesellschaft* 64. 1-21.

Ducrot, Oswald. 1976. "Quelques implications linguistics de la théorie médiévale de la supposition". Parret 1976. 189-227.

Dufour, Carlos. 1987. *Die Lehre der Proprietates Terminorum: Sinn und Referenz in der mittelalterlichen Logik*. München: Philosophia.

Dutz, Klaus D. 1984. "Natürliche Sprache und/oder Ideale Sprache? Zwei Ansatzpunkte bei der Betrachtung der Sprach- und Zeichentheorie im 17. Jahrhundert". *Fallstudien zur Historiographie: Heraklit, D'Ailly und Leibniz* ed. by Klaus D. Dutz & Peter Schmitter, 35-61. Münster: Inst. f. Allgem. Sprachwiss. d. Westfälischen Wilhelm-Univ.

Frege, Gottlob. 1891. *Function und Begriff*. Jena: H. Poule.

——. 1892. "Über Begriff und Gegenstand". *Vierteljahrsschrift für wissenschaftliche Philosophie* 16, 192-205.

——. 1974. *Begriffsschrift und andere Aufsätze*. Ed. by Ignacio Angelelli. Hildesheim: G. Olms.

Heinekamp, Albert. 1972. "Ars characteristica und natürliche Sprache bei Leibniz". *Tijdschrift voor Filosofie* 34. 446-88.

——. 1976. "Sprache und Wirklichkeit bei Leibniz". Parret 1976. 518-70.

Hunter, Greame. 1984. Review of Burkhardt 1980. *Review of Metaphysics* 37. 843-44.

Jacobi, Klaus. 1980. "Diskussionen über die Prädikationstheorie on den logischen Schriften des Petrus Abailardus, Versuch einer Übersicht". *Petrus Abaelardus (1079-1142): Person, Werk und Wirkung*, ed. R. Thomas 165-79. Trier (Trierer Theologischen Studien, Bd. 38.)

Kauppi, Raili. 1960. *Über die Leibnizsche Logik: Mit besonderer Berücksichtigung des Problems der Extension und Intension* (*Acta Philosophica Fennica*, 12) Helsinki.

Kneale, William & Martha. 1962. *The Development of Logic*. Oxford: Clarendon Press. (2nd ed., 1971.)

Lenzen, Wolfgang. 1983. "Zur extensionalen und 'intensionalen' Interpretation der Leibnizschen Logik". *Studia Leibnitiana* 15. 129-48.

——. 1984a. "'Unbestimmte Begriffe' bei Leibniz". *Studia Leibnitiana* 16. 1-26.

——. 1984b. "Leibniz und die Boolesche Algebra". *Studia Leibnitiana* 16. 187-203.

——. 1985. "Leibniz-Kalkül der strikten Implikation". To appear in *Studia Leibnitiana*.

Martin, Richard M. 1986. *Metaphysical Foundations: Mereology and Metalogic*. Munich: Philosophia Verlag.

Parret, Herman, ed. 1976. *History of Linguistic Thought and Contemporary Linguistics*. Berlin & New York: Walter de Gruyter.

Poser, Hans. 1969. *Zur Theorie der Modalbegriffe bei G.W. Leibniz*. Wiesbaden: Steiner.

——. 1979. "Signum, notio und idea: Elemente der Leibnizschen Zeichentheorie". *Zeitschrift für Semiotik* 1. 309-324.

Quine, Willard van Orman. 1953. *From a Logical Point of View: Logico-philosophical essays*. Boston.

Schepers, Heinrich. 1966. "Leibniz' Arbeiten zu einer Reformation der Kategorien". *Zeitschrift für philosophische Forschung* 20. 539-67.

Schmidt, Franz. 1955. "Leibnizens rationale Grammatik". *Zeitschrift für philosoph. Forschung* 9. 657-63.

Schneider Martin. 1974. *Analysis und Synthesis bei Leibniz*. Diss., Univ. Bonn, 348 pp.

Schulthess, Peter. 1982. Besprechung von Burkhardt 1980. *Studia philosophica* 41. 201-12.

Thiel, Christian. 1965. *Sinn und Bedeutung in der Logik Gottlob Freges*. Meisenheim: Hain.

Vuillemin, Jules. 1967. "L'Analogie". *De la Logique à la Théologie. Cinq études sur Aristote*, 13-43. Paris: Flammarion.

LANGUAGES AS *MÉTHODES ANALYTIQUES* IN CONDILLAC

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> La pensée, chaotique par sa nature, est forcée à se préciser en se décomposant.
>
> F. de Saussure, *CLG* II, iv

1. *Introductory*

This paper aims to shed some light on an often neglected aspect of Condillac's (1715-80) linguistic thought, namely his theory of the 'analytic' character of language — a view which had a notable influence on linguistic and aesthetical debates of his time.

The idea of the analyticity of language is one of the leading themes in the whole Condillac's work: it is implicitly in action as early as in his *Essai sur l'origine des connoissances humaines* (1746), where the contribution of language to the articulating of thought is described, but it takes its full development later in many passages of the splendid *Cours d'etudes* (where Condillac admits that "elle m'avoit échappé" before), and significantly contributes to the structuring of his latest works (*Logique* and *La langue des calculs*).[1] The very persistence of this theme throughout his work is a relevant feature: in a work that, like Condillac's, may easily be considered as the continuous rewriting of the same book, the concept of analyticity of language makes up a point of connection of many other major ideas of his philosophy of language, as for instance the theory of the order of linguistic elements and the opposition of simultaneousness vs successiveness of language units.

2. *From the* langage d'action *to the* langage articulé

It is well known that in XVIIth and XVIIIth centuries many aspects

of human behavior were investigated genetically, by a sort of *Gedanken-experiment* based on the reconstruction of their 'natural history', even regardless of any philological evidence. J.-J. Rousseau's (1712-78) conception of the origins of human society and Giambattista Vico's (1688-1744) 'ideal history' of human institutions are very clear and well-known examples of this philosophical bias. This model of reconstruction was also persistently practised by Condillac who went back in this way to the earliest stages of knowledge and language by supposing, both philologically and fantastically, their primeval characters.

What is important to us here is that in his effort to describe the original nature of human knowledge he makes use of a very peculiar set of metaphors which are designed to define some specific aspects of the 'primitive' thought and language. These metaphors are generally of visual nature (undoubtely in connection with the importance that vision has in Condillac's theory of perception) for they aim to stress the simultaneous, rather than sequential, nature of the visual perception: the theater, the wink of an eye from a castle, the picture: [2]

> Que quelqu'un soit dans un spectacle, où une multitude d'objets paroissent se disputer ses regards, son âme sera assaillie de quantité de perceptions, dont il est constants qu'il prend connoissance; mais peu-à-peu quelques-unes lui plairont et l'intéresseront davantage: il s'y livrera donc plus volontiers (*Essai* I, II, i, § 5 = Le Roy I: 11).

Such metaphors are designed to emphasize the global, overall character of perception and thinking in their earliest stages: in that epoch no single perceptible element could be isolated against the mass of perception, which appeared as unordered and simultaneous in nature. What was able to focus, isolate and individually cut out single elements of perception was the *attention* (*Essai, ibid.*), without the intervention of which there was just a "multitude de détails" (*Logique* II, II = Le Roy II: 397). Learning this inarticulate globality is false or even impossible. It is just through practice that we can concentrate our perception on single items and grasp the mutual relationships they have with each other — like painters do when they see in a picture specific aspects that the normal *prima facie* perception is not able to catch (*Grammaire* I, I = Le Roy I: 430).

The form of language that is most suitable to give expression to this type of thinking is the *langage d'action*, a mixture of gestures, movements and cries, which by its very nature "ne parle qu'aux yeux" (*Grammaire* I, I = Le Roy I: 428) and in which "il n'y a point de succession dans *les* idées" (*ibid.* = Le Roy I: 430):

> [Les idées] s'offrent toutes à la fois dans son [i.e., of man] action, comme elles

sont toutes à la fois presentes à son esprit. On pourroit l'entendre d'un clin d'oeil, et, pour le traduire, il faudrait un long discours (*ibid.* = Le Roy I: 430).

According to the nature of the thinking it expresses, the *langage d'action* has the great advantage of being rapid ("Celui qui le parle paroît tout dire sans effort. Avec nos langues, au contraire, nous nous traînons péniblement d'idée en idée, et nous paroissons embarrassés à faire entendre tout ce qui nous pensons": *ibid.*),[3] but also the disadvantage of being confused ("il tend à confondre ce qui est distinct dans le langage des sons articulés": *ibid.*). Furthermore it reveals a discrepancy between the 'speaker' and the 'hearer', because *les idées* which "sont simultanées dans celui qui parle le langage d'action [...] deviennent souvent successives dans ceux qui écoutent" (*ibid.* = Le Roy I: 430). This is the first appearance of a new dimension in language, that of successivity.[4] It is within this dimension that the receiver interprets the message formulated through the *langage d'action*:

> C'est ce qui arrive lorsqu'au premier coup d'oeil ils lassent échapper une partie de l'action. Alors, ils ont besoin d'un second coup d'oeil, ou même d'un troisième pour tout entendre (*ibid.*).

The radical asymmetry obtaining between the simultaneous character of language produced by the speaker and the successiveness of the interpretation by the hearer can be cause of misunderstandings. The need to communicate by the same system produces a drastic change in the structure of the *langage d'action*, for it introduces into it some mechanisms which force it to become sequential:

> Le besoin qu'ils ont de s'entendre leur apprend bientôt à décomposer les langues. L'un s'étudie à dire mois de choses à la fois, et *il se substitue des mouvemens successifs à des mouvemens simultanées*. L'autre s'applique à observer successivement le tableau que la langage d'action met sous ses yeux, et *il rend successif ce qui ne l'est pas*. [...] Ils savent donc *décomposer* ou *analyser* leur pensée; car analyser n'est autre chose qu'observer successivement et avec ordre (*ibid.* = Le Roy I: 430-431 — italics mine).

It is the need to understand and to make oneself understood that causes the restructuring of language into the articulate form; the factor that intervenes to turn the primeval *langage d'action* into the articulate language is a new, revolutionary mechanism (or *operation de l'âme*), namely analysis: "aussitôt que les hommes commencent à décomposer leurs pensées, le langage d'action commence aussi à devenir un langage artificiel" (*ibid.* = Le Roy I: 431).

3. *What does* to analyse *mean*

This is how the term and the theme of analysis appears in Condillac's philosophy. It is quite central in it, and not merely from the linguistic point of view. Its centrality is clearer if we consider how many relationships it is able to create with some fundamental Condillac's concepts, like those of sign, memory, and so on.

Signs are essential to human knowledge as they contribute to introduce an articulation into the mass of perceptions and thoughts. Many mental operations are made possible precisely by the availability of signs: "L'usage des signes est la vraie cause des progrès de l'imagination, de la contemplation et de la mémoire" (*Essai* I, II, iv = Le Roy I: 19). Memory itself "ne consiste que dans le pouvoir de nous rappeler les signes de nos idées" (*ibid.*), and consequently the man who has not signs at his disposal is without memory as well (cf *Essai* I, II, iv, § 46 = Le Roy I: 21). [5]

The subject of the importance of signs for the gradual unfolding of the knowledge is developed more in detail in several parts of the *Cours d'études*, where it is presented with a more frankly didactic *allure*. It is here in fact that it comes out with the greatest evidence that signs are themselves the result of the systematic application of analysis to the contents of thought, and that they are as it were the names assigned to the segments obtained through the analysis. In other words the segmentation they produce in thought is needed "pour démêler les opérations de notre âme" (*Grammaire* I, IV = Le Roy I: 438).

If seen more closely, signs are responsible for a real cognitive revolution in man, for they permit the transition from a merely simultaneous thinking to a sequential representation of ideas. The confusion of communication in earlier stages of mankind is got over through the use of signs, which also makes the accumulation and the retrievability of information possible. The thus gained successivity of ideas enhances the development of all the operations of mind and introduces a quite new principle of thinking, that is the principle of order:

> Il ne suffiroit pas de faire passer ces qualités l'une après l'autre devant l'esprit. Si elles y passoient sans ordre, nous ne saurions où les retrouver; il ne nous resteroit que des idées confuses; et, par conséquent, nous ne retirerions presque aucun fruit des décompositions que nous aurions faites. L'analyse est donc assujettie à un ordre (*Grammaire* I, IV = Le Roy I: 438).

Signs with their sequential order offer the basis for the birth of the speech (*discours*), whose first property is its linear ordering. The two orders of thinking and speech are thus perfectly distinct, the former being simultaneous whereas the latter is linear: [6]

Si toutes les idées, qui composent une pensée, sont simultanéees dans l'esprit, elles sont successives dans le discours: ce sont donc les langues qui nous fournissent les moyens d'analyser nos pensées (*Grammaire* I, III = Le Roy I: 436).

Dans chaque mot vous avez considéré chaque idée séparément; et dans deux mots que vous avez rapprochés, vous avez observé le rapport que deux idées ont l'une à l'autre. C'est donc à l'usage des mots que vous devez le pouvoir de considérer vos idées chacune en elle même, et de les comparer les unes avec les autres pour en découvrir les rapports. En effet vous n'aviez pas d'autre moyen pour faire cette analyse. Par conséquent, si vous n'aviez eu l'usage d'aucun signe artificiel, il vous auroit été impossible de la faire (*Grammaire* I, IV = Le Roy I: 437). [7]

Language is thus a *méthode analytique* (*Grammaire*, I, II = Le Roy, I, 431) inasmuch as it is a crucial tool for decomposing the thought and forcing it to order itself in the successive elements of speech (cf. also *Art de penser* I, VI = Le Roy I: 731 ff.). In this sense knowledge is sign-based, or even language-based, for language itself incorporates a method of knowledge. This is, as is easy to see, a strong affirmation of the linearity of speech, as well as the most explicit and vigorous phrasing of the analytic, rather than merely communicative nature of language:

Le premier objet du langage est donc d'analyser les pensées. En effet nous ne pouvons montrer successivement aux autres les idées qui co-existent dans notre esprit, qu'autant que nous savons les montrer successivement à nous-mêmes; c'est-à-dire que nous ne savons parler aux autres qu'autant que nous savons nous parler. On se tromperait, par conséquent, si l'on croyoit que les langues ne nous sont utiles que pour nous communiquer mutuellement nos pensées (*Grammaire* I, VI = Le Roy I: 442).

With these words a long-standing view of the function of language is deliberately abandoned: language is not made just for communication, it is rather an essential tool for analysing our thought and for reducing it into discrete segments. If not all are able to take full advantage of the analytic power of language, language is not responsible for this:

Si, quelque parfaite que soit une langue, si, quelque propre qu'elle soit aux analyses, elle ne donne pas le même secours à tous les esprits, c'est que nous savons mal notre langue. Nous apprenons les mots avant d'apprendre les idees (*Art de penser ib.* = Le Roy I: 734).

This concern with the link between language and the development of knowledge explains the persistent occurrence of the idea that "savoir sa langue" is an essential prerequisite for learning sciences (cf., for this theme, the *Traité des systèmes*, for instance XVIII = Le Roy I: 215 ff.: "Voulez-vous apprendre les sciences avec facilité? Commencez par apprendre votre langue").

That is also the reason why the lack of or the insufficient exposure to language can be the cause of a general collapse of knowledge:

Des gestes, des sons, des chiffres, des lettres: c'est avec des instrument aussi étran-
ges a nos idées que nous les [les sensations et les opérations de l'âme] mettons en
oeuvre, pour nous élever aux connaissances les plus sublimes. Les matériaux sont
les mêmes chez tous les hommes: mais l'adresse à se servir des signes varie; et de-là
l'inégalité qui se trouve parmi eux. Refusez a un esprit supérieur l'usage des charac-
tères: combien de connaissances lui sont interdites, auxquelles un esprit médiocre
atteindroit facilement? Ôtez-lui encore l'usage de la parole: le sort des muets nous
apprend dans quelles bornes vous le renfermez. Enfin, enlevez-lui l'usage de toutes
sortes de signes; qu'il ne sache pas faire à propos le moindre geste, pour exprimer
les pensées les plus ordinaires: vous aurez en lui un imbécille (*ibid.* = Le Roy I: 734-
35). [8]

4. *Implications of the idea of languages as* méthodes analytiques

The central role of Condillac's notion of analyticity of language can
be better appreciated if we consider more closely some of its implica-
tions for his view of language. They can be found out particularly in his
Cours d'études, where (in the *Art de penser*) he acknowledges that the
idea of language as *méthode analytique* "*lui* avoit échappé" [9] until then,
and he draws from it an important set of speculations.

The first important consequence is the idea that there exists a differ-
ence between the order according to which we acquire ideas and the one
according to which we distribute them among the hearers. The latter is
but the upsetting of the former:

Le premier est... celui de leur [des idées] génération; le second est le renversement
du premier. C'est celui ou nous commençons par l'idée la plus générale, pour de-
scendre, de classe en classe, jusqu'à l'individu.
   Vous aurez, plus d'une fois, occasion de remarquer que les idées generales abrè-
gent le discours. C'est donc par elles qu'il faut commencer, quand on parle à des
personnes instruites ... Il n'en est pas de même quand on parle à des personnes qui
ne savent rien ou qui savent tout imparfaitement (*Grammaire* I, V = Le Roy I: 440).

The same sociolinguistic sensitivity appears in a place where Condillac
discusses how society contributes to the development of knowledge. Since
each social class gathers a certain amount of *observations* (according to
its specific interests), it creates a body of knowledge which it contributes
to the general mass of knowledge the society enjoys and takes advantage
of. This is a Lockean view, from which an original conclusion is drawn:

Chaque classe, à mesure qu'elle acquiert des connaissances, enrichit la langue des
mots qu'elle croit propres à les communiquer. Le système des langues s'étend donc,
et il se met peu à peu en proportion avec celui des idées (*Grammaire* I, II = Le Roy
I: 434).

On the same basis it is possible to Condillac to set out a sort of

linguistic typology, perfectly in accordance with other XVIIth Century typological schemes (like Vico's): the more analytic languages are, the more perfect they are. In this view there is also a diachronic perspective; languages can evolve in analyticity:

> Les langues ne se perfectionnent qu'autant qu'elles analysent; au lieu d'offrir à la fois des masses confuses, elles presentent les idées successivement, elles les distribuent avec ordre, elles en font diverses classes; elles manient, pour ainsi dire, les éléments de la pensée, et elles les combinent d'une infinité de manières; c'est à quoi elles réussissent plus ou moins, suivant qu'elles ont des moyens plus ou moins commodes pour séparer les idées, pour les rapprocher, et pour les comparer sous tous les rapports possibles. Vous connoissez, Monseigneur, les chiffres romains et les chiffres arabes; et vous jugez, par votre expérience, combien ceux-ci facilitent les calculs. Or, les mots sont, par rapport a nos idées, ce que les chiffres sont par rapport aux nombres. Une langue serait donc imparfaite, si elle se servoit de signes aussi embarrassans que les chiffres romains (*Grammaire* I, II = Le Roy I: 435).

The language which is implicitly referred to in this passage is obviously the French one, which seems to Condillac to be perfectly balanced between *imagination* and *analyse*, as a famous page of the *Essai sur l'origine des connoissances humaines* shows:

> Il faudrait [...] imaginer deux langues: l'une qui donnât tant d'exercice à l'imagination, que les hommes qui la parleroient déraisonneraient sans cesse; l'autre qui exerçât au contraire si fort l'analyse, que les hommes a qui elle serait naturelle se conduiroient jusque dans leurs plaisirs comme des géomètres qui cherchent la solution d'un problème. Entre ceux deux extrémités, nous pourrions nous représenter toutes les langues possibles [...] La plus parfaite occuperoit le milieu, et le peuple qui la parleroit seroit un peuple de grands hommes (*Essai* II, I, xv, § 156 = Le Roy I: 102).

In this way the sophisticated conceptual construction of Condillac ended by putting itself at the grounds of the glorification of the *génie* of the French language, the only one able to "analyser les pensées dans les moindres détails":

> Dans le français, tel que vous le savez aujourd'hui, vous voyez une langue qui a fait des progrès, qui fait plus d'analyses, et qui les fait le mieux. Enfin, dans le français tel que vous le saurez un jour, vous prévoyez de nouveaux progrès; et vous commencez à comprendre comment il deviendra capable d'analyser les pensées dans les moindres détails (*Grammaire* I, VI = Le Roy I: 442).

NOTES

1) The quotations of Condillac's works are from *Oeuvres philosophiques*, ed. by G. Le Roy (see *References*, A; *Essai = Essai sur l'origine des connoissances humaines*.) For a general presentation and discussion of Condillac's philosophy of language, see Aarsleff (1982), which detailedly reconstructs the context in which Condillac's linguistic thought was developed, and Sgard (1982).

2) See for instance *La Logique* I, II (= Le Roy II: 374 ff.): "Je suppose un château qui domine sur une campagne vaste, abondante, où la nature s'est plue à répandre la variété...". Cf Andresen (1980: 188-89).

3) The opposition between the speed of the inner speech and the slowness of the external one was a classical motif of ancient and medioeval philosophy of language, which often used it to assert the deeper genuinity of the former. For some bibliographic indications, see Rotta (1909: 107 ff.).

4) For this point, see the remarks of Aarsleff (1982: 157-58).

5) For a similar view, see John Locke's (1632-1704) *Essay Concerning Human Understanding*: "The use men have of these marks, being either to record their own thoughts for the assistance of their own memory..." (III, II, 2); "It is the name that seems to preserve these essences and give them their lasting duration. For, the connection between the loose parts of those complex ideas being made by the mind, this union, which has no particular foundation in nature, would cease again, were there not something that did, as it were, hold it together, and keep the parts from scattering. Though therefore it be the mind that make the collection, it is the name which is as it were the knot that ties them fast together" (III, V, § 10).

6) This distinction had a great fortune in France and elsewhere. Denis Diderot (1713-1784) developed it, in his *Lettre sur les sourds et les muets*, as the basis for a philosophical differentiation between poetry and painting, which Lessing made use of in his *Laocoon*. See Weinrich (1982) for all this issue.

7) This line of reasoning is presented again, though in a more contracted form, in *Logique* II, II ff. = Le Roy II: 396 ff. (For instance: "L'analyse ne se fait et ne peut se faire qu'avec des signes" — II, III = Le Roy II: 398).

8) The reference to deafs is a typical aspect of XVIIIth century thought. Deafs were envisaged as a model of what could happen to knowing subjects, were there some limitations in their organisms. Condillac himself made use this model on many occasions (cf, among other places, *Art de penser* I, VII = Le Roy I: 735 ss.).

9) This statement is made in a footnote of *L'art de penser*: "Les langues sont des méthodes analytiques. Cette observation, qui m'avait échappé et que j'ai faite dans ma Grammaire, suffit seule pour démontrer la nécessité des signes" (I, VI = Le Roy I: 733).

REFERENCES

A. *Primary Source*

Le Roy = *Oeuvres philosophiques de Condillac*. Ed. by Georges Le Roy. 3 vols. Paris: Presses Universitaires de France, 1947-51.

B. *Secondary Sources*

Aarsleff, Hans 1982. *From Locke to Saussure*. London: Athlone Books.
Andresen, Julie 1980. "From Condillac to Condorcet: The algebra of history". *Progress in Linguistic Historiography* ed. by E.F. Konrad Koerner, 187-97. Amsterdam & Philadelphia: John Benjamins.
Rotta, Paolo 1909. *La filosofia del linguaggio nella Patristica e nella Scolastica*. Milano & Roma: Bocca.
Sgard, Jean, ed. 1982. *Condillac et les problèmes du langage*. Genève & Paris: Slatkine.
Weinrich, Harald 1982. "Die transitorischen Momente der Sprache". *LeSt* 17. 173-93.

TURGOT'S "ÉTYMOLOGIE" AND MODERN LINGUISTICS

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Compiling the article "Étymologie" for the *Encyclopédie* (*ou diction-naire raisonné des sciences, des arts et des métiers*, tome VI, Paris, 1756) is not an isolated episode in the life and work of Anne-Robert-Jacques Turgot (1727-81). Indeed his interest in languages and the history of languages can also be seen in other works, such as the *Tableau philosophique des progrès successifs de l'esprit humain* (1750), the *Plan de deux discours sur l'histoire universelle* (1751) and the *Essay d'un alphabet universel*, which was a work written in his youth and later found and published by Droixhe (1971: 97-99), who says that this paper "confirme, s'il était encore nécessaire, le génie linguistique de Turgot et, plus largement, l'avance de son siècle dans la discipline qui est la nôtre".

As far as the entry "Étymologie" in the *Encyclopédie* is concerned, first of all the problem of to whom it should be ascribed must be resolved. Aarsleff (1982: 203, n. 72) says that Turgot's work was not his own and that "his article on etymology was based on work by de Brosses". But Piron (1961: VI-VII) has proved quite the opposite, basing his theory on evidence by André Morellet (1727-1819) and Charles de Brosses himself (1709-78): "L'article *Etymologie* est à lui; mon *Traité* est à moi...". And indeed de Brosses' concept of etymology (1765) is completely different from Turgot's, as he places greater importance on the affinity of meaning between the derived word and the original one, pays more attention to the written word than to the sounds in a language and, finally, takes etymology to be the natural evolution of languages without taking into consideration the historical factors which determine change. Furthermore, he sees etymology as a remote reconstruction of the origin of the word, while Turgot, as shown below, sees it as a recent etymology, as the history of the word from the moment when the semantic and phonetic change took place (Droixhe 1978: 198-201). Moreover, the theoretic approach is quite different, because de Brosses' aim is to define the mechanical and universal laws governing linguistic

changes, while Turgot sets out to describe and define the methodology
of etymological and historical research into the changes which take place
in languages. Turgot says (1756: 98):

> l'art étymologique est, comme tout art conjectural, composé de deux parties, l'art
> de former les conjectures ou les suppositions, et l'art de les vérifier; ou en d'autres
> termes l'invention et la critique: les sources de la premiere, les règles de la seconde,
> sont la division naturelle de cet article; car nous n'y comprendrons point les re-
> cherches qu'on peut faire sur les causes primitives de l'institution des mots, sur
> l'origine et les progrès du langage, sur les rapports des mots avec l'organe qui les
> prononce, et les idées qu'ils expriment.

While de Brosses' work entirely reflects the eighteenth century mechanis-
tic culture, which considers the history of languages as the natural evo-
lution of an assumed primitive language, Turgot's is a forerunner of the
concept of historicity taken as a change in the social and cultural con-
ditions which have determined the history of languages. This is why
Turgot's entry "Étymologie" must be considered not within the culture
of his time but as looking forward to future linguistics. In other words,
in order to appreciate the innovations found in Turgot's approach com-
pletely, it is necessary to make a comparison between his assertions and
the development of linguistics in the nineteenth and twentieth centuries,
because he takes into consideration those historical and cultural factors
of linguistic change upon which light has been fully shed only in the last
two centuries. Moreover, he also considers other factors which, even
today, have not been examined well enough to afford an elaboration of
a complete theory of linguistic change. Guiraud rightly says (1964: 27)
that Turgot's article "Étymologie"

> est prophétique et non seulment il pose la plupart des principes dont sortira la lin-
> guistique historique, mais il est encore sur bien des points en avance de cette der-
> nière et, après un siècle de recherches, en avance qualquefois sur nous.

The principle of the arbitrary nature of linguistic signs, as opposed to
the hypothesis of the onomatopoeic origin formulated by de Brosses, is
stated at the beginning of the entry.

> Les mots n'ont point avec ce qu'ils expriment un rapport nécessaire; ce n'est pas
> même en vertu d'une convention formelle et fixée invariablement entre les hommes,
> que certains sons réveillent dans notre esprit certains idées. Cette liaison est l'effet
> d'une habitude formée dans l'enfance à force d'entendre répéter les mêmes sons
> dans des circonstances à-peu-près semblables: elle s'établit dans l'esprit des peuples;
> sans qu'ils y pensent (Turgot 1756: 98).

This principle is the basis for tracing the history of single words and
their changes, which mainly consist in changes in the relationships be-
tween the signifier and the significatum of the words. Such changed take

place either through contact among different languages or through a
principle of "variation" within the life of the language itself: "Ainsi à
considérer une langue indépendamment des ses rapports avec les autres
langues, elle a dans elle-même un principe de variation" (Turgot 1756:
98), which consists both in phonetic alterations occurring in the pro-
nunciation of words from one generation to another and in semantic
changes which take place by adding new accepted meanings and creating
others through metaphorical use, etc.

Turgot does not restrict himself to considering etymology as a simple
reconstruction of the original form of words, but his research is part of
his general method of the diachronic study of languages. The entry
"Étymologie", therefore, takes the form of a real treatise on historical
linguistics in which the methods of enquiry into the history of languages
are seen as being closely linked with the description of the political, cul-
tural and social events which characterised the history of peoples speak-
ing different languages in past centuries. The method of comparison of
languages and of the diverse linguistic innovations that occurred through
the ages in the original language is the basic instrument in historical ety-
mological enquiry:

> Lorsque de cette langue primitive plusieurs se sont formées à la fois dans différents
> pays, l'étude de ces différentes langues, de leurs dialectes, des variations qu'elles
> ont éprouvées; la comparaison de la manière différente dont elles ont altéré les
> mêmes inflexions, ou les mêmes sons de la langue mère, en se les rendant propres;
> celle des directions opposées, si j'ose ainsi parler, suivant lesquelles elles ont
> détourné les sens des mêmes expressions; la suite de cette comparaison, dans tout
> le cours de leur progrés, et dans leurs différents époques, serviront beaucoup à
> donner des vûes pour les origines de chacune d'entr'elles (Turgot 1756: 100).

In these few lines we can already see most of the programme of
nineteenth century historical linguistics which made comparative meth-
ods the favourite tool of research into the history of languages, their
innovations and the reconstructive enquiry into unproven phases. Ety-
mological enquiry, taken as a fundamental moment in the historical re-
search into languages, gives back to the word all the historical depth of
meanings, both real and metaphorical, which have been built up in the
course of time as a result of the events of the material and cultural life
of different peoples, who with their variable relationships have ex-
changed ideas, objects and their relative linguistic denominations for
centuries. The history of languages is seen as the history of these rela-
tionships and, as a result, at times as the only document of contact be-
tween peoples; the "substratum" (and "adstratum") concept is summed
up here to explain the derivation of Romance languages from Latin and
this anticipates Carlo Cattaneo (1801-69) and Graziadio Isaia Ascoli

(1829-1907), who formulated the theory of substratum ethnic reactions
(cf. Silvestri 1977); Turgot says:

> Il n'y a aucune langue dans l'état actuel des choses qui ne soit formée du mélange
> ou de l'altération des langues plus anciennes, dans lesquelles on doit retrouver une
> grande partie des racines de la langue nouvelle [...] c'est ainsi qu'il n'est pas néces-
> saire d'être versé dans l'art étymologique, pour savoir que le françois et les autres
> langues modernes du midi de l'Europe se sont formées par la corruption du latin
> mêlé avec le langage des nations qui ont détruit l'Empire romain.

Turgot rightly distinguishes between two types of etymology: one reveals
the derivation of words from the original language, and he gives a few
examples of this (*métier* from Lat. *ministerium*, *marguiller* from Lat.
matricularius, etc.); the other reveals the derivation of a word borrowed
from a coeval language (eg. "le nom de *boussole* nous est venu des Ita-
liens, avec l'usage de cet instrument", Turgot 1756: 100). The meaning
and knowledge of an object may represent an initial guide for the basis
of an etymological hypothesis, but neither such an hypothesis based
solely on semantic arguments nor that based solely on phonetic data can
be completely valid:

> Je ne sais si en matiere de conjectures étymologiques, les analogies fondées sur la
> signification des mots, sont préférables à celles qui ne sont tirées que du son même.
> Le son paroît appartenir directement à la substance même du mot; mais la vérité
> est que l'un sans l'autre n'est rien, et qu'ainsi l'un et l'autre rapport doivent être
> perpétuellement combinés dans toutes nos recherches (Turgot 1756: 101).

These considerations of method, and others which follow, would make
one think of a later state of both semantic and phonetic studies. First of
all, it should be noted that we no longer find here the confusion, not
only terminological, between "letter" and "sound", a confusion which
persists for the whole of the eighteenth century and which will only dis-
appear in the late nineteenth century after the acceptance of the pho-
netic aspect as a real object of linguistic enquiry, with the consequent
foundation of an autonomous phonetic science. The acceptance of lan-
guage in its spoken aspects and of written texts with their, at times
problematic, phonetic aspects appears late: both Saussure and Bloom-
field complained about this delay, caused by the persisting confusion
between the written and spoken forms, because of the negative effect it
had on the history of linguistic science (cf. Abercrombie 1949). This
confusion seems to have already disappeared in Turgot's theories, since
he always speaks about *sounds*: he seems to underline the spoken and
phonetic aspects, rather than the written and erudite ones of linguistic
expression, not only when he is making a series of purely phonetic con-
siderations in the description of vowels and consonants, but also when

he points out the way to explain the changes which occurred historically within languages:

> Lorsqu'on veut tirer les mots d'une langue moderne d'une ancienne, les mots fran-
> çois, par exemple, du latin, il est très-bon d'étudier cette langue, non-seulement
> dans sa pureté et dans les ouvrages des bons auteurs, mais encore dans les tours les
> plus corrompus, dans le langage du plus bas peuple et des provinces [...] c'est
> le peuple grossier qui a le plus contribué à la formation des nouveaux langages
> (Turgot 1756: 100).

We can already find here the concept of "vulgar Latin", meaning that level of spoken Latin from which Romance languages derived, a concept which will be defined and developed by Romance linguistics in the nineteenth century.

As we have already seen, this idea of etymology which considers both the semantic and phonetic aspects would presuppose a more mature and advanced state of linguistic studies than that found in the eighteenth century, or even in the nineteenth: comparative historical linguistics, which placed more importance on phonetic laws, developed a wholly phonetic concept of etymology (e.g. Meyer-Lübke's REW), while the concept of etymology as the semantic and phonetic history of words has been a decisive conquest of twentieth century linguistics (e.g. v. Wartburg's FEW).

So far we have examined the first part of the entry "Etymologie" (*Sources des conjectures étymologiques*) concerning the grounds of the hypothesis. We shall now consider the second part, *Principes de critique pour apprécier la certitude des étymologies*. Turgot goes on to give a series of warnings and methodological rules which should be used to verify the hypothesis empirically and which concern in particular the relationships between languages and the history of peoples, the chronology of linguistic changes in relationship to the chronology of historical events (migrations, conquests, superimpositions and mixing of peoples, and so on), the geographic distances between the languages and ethnic groups, etc.; the etymologist must be cautious in his methodology and must not venture into hypotheses which are not sufficiently substantiated by historical documentation, which is why Turgot explicitly states his preference for close etymology, formulating the rule "de ne remonter de chaque mot qu'à son *étymologie* immédiate" (p. 107). This rule is not only necessary to avoid inventing etymologies which are not backed up by data originating in historical comparison (such as that of Bochart, who says the name *insula Britannica* is derived "de l'hébreu *Baratanac*, pays de l'étain", p. 103), but is also the statement of a methodological principle according to which etymological reconstruction has to stop at the point when a solution of continuity in the phonetic and semantic

derivation of the word is found (cf. Droixhe 1978: 208-10). The examples of etymology Turgot gives in order to back up his methodological rules are all well-founded, even in the case of loan words without the respective people ever having had any direct contact but merely relationships of a cultural or religious nature. Turgot says, for example (1756: 104): "Une *étymologie* latine d'un mot polonois ou irlandois, recevra donc un nouveau degré de probabilité, si ce mot est relatif au culte, aux mysteres, et aux autres objets de la religion". Otherwise the means of the loan may consist in the trade and commercial relationships between peoples, as is the case of the French word *sac* (Italian *sacco*) which comes from the Hebrew "*une étoffe grossiere*" (1756: 104) through Greek, then Latin, hence to all the Romance and to the Celtic and Germanic languages. This is one of the examples of exact etymology in which Turgot reveals his competence in the use of the instruments of historical and linguistic enquiry.

His feeling for the historical phenomena of language leads him to pay particular attention to the creation of metaphors and tropes, "par lesquels on a fait servir les noms anciens à désigner des objets nouveaux" (1756: 105). Thus he describes the various processes according to which a certain word acquires a figurative meaning, which often replaces the original meaning and then undergoes other processes of, for example, metaphorical or metonymical use. These semantic mutations occur in everyday speech and the rhetorical figures are not seen as instruments of stylistic ornamentation in the literary or learned tongue but are explicitly considered as phenomena of transference of meaning belonging to the everyday spoken language; César Chesneau Du Marsais (1676-1756) had already said in his treatise *Des tropes* (1730): "Je suis persuadé qu'il se fait plus de figures un jour de marché à la Halle, qu'il ne s'en fait en plusieurs jours d'assemblées académiques". The semantic phenomenon of figurative use is also seen in its universal dimension because it operates in all languages as a phenomenon of change in the meaning of words, and surprising coincidences can often be found in languages which, while belonging to different, distant groups and families, present the same changes in meaning. The example is particularly interesting:

> Rien ne paroît d'abord plus étonnant que de voir le nom de *pupilla*, petite fille, diminutif de *pupa*, donné à la prunelle de l'oeil. Cette *étymologie* devient indubitable par le rapprochement du grec κόρη, qui a aussi ces deux sens, et de l'hébreu *bath-ghnaïn*, la prunelle, et mot pour mot *la fille de l'oeil*: à plus forte raison ce rapprochement est-il utile pour donner un plus grand degré de probabilité aux *étymologies*, fondées sur des métaphores moins éloignées (Turgot 1756: 105).

This example, therefore, tends to show how the phenomenon of figurative use is universal, so that sometimes semantic coincidences can be

found in the autonomous formation of similar metaphors (or metonyms) in languages which are different or distant from each other without there having been any influence of the one on the other. These are the same conclusions Carlo Tagliavini will come to in his masterly ono-masiological essay (1949) about the denomination of the "pupil" in Hamitic-Semitic and Negro-African languages compared with, among others, Indo-European, Uralic, Altaic, Caucasian and Dravidian languages; in this essay Turgot is quoted among those who also studied this specific topic.

At least two other principles of empirical verification of etymological hypotheses have to be pointed out to measure how far in advance of his time Turgot was in his linguistic ideas. The older a word is, the more phonetic changes it has undergone in the course of time; the more a word is used, the more it is changed and reduced in its phonetic density:

> le tems et la fréquence de l'usage d'un mot se compensent mutuellement pour l'al-térer dans le même degré. C'est principalment la pente générale que tous les mots ont à s'adoucir ou à s'abréger qui les altere. Et la cause de cette pente est la com-modité de l'organe qui les prononce. Cette cause agit sur tous les hommes: elle agit d'une maniere insensible, et d'autant plus que le mot est plus répeté (Turgot 1756: 106).

It is rather surprising to see enounced here a statistical law of which we became aware only with the formulation of Zipf's law: $f \times r = \text{constant}$; according to this law, there is an inverse proportional relationship between rank and frequency in a series of words set in a descending order of frequency of use (Guiraud 1954). This is another foresight which went beyond nineteenth century historical linguistics, as Guiraud says (1964: 27). But there is another of Turgot's intuitions which is even in advance of the contemporary theory of linguistic change which can describe the mechanism of change and the fact that it spreads because of the interference between languages; the variation in strata and linguistic levels, etc., but is not yet able to explain the origin of the change itself. Well, Turgot offers us a rather interesting hint by referring implicitly to the psychological mechanisms of perception as possible factors in linguistic change.

> Tous les changemens que souffre la prononciation ne viennent pas de l'euphonie. Lorsqu'un mot, pour être transmis de génération en génération, passe d'un homme à l'autre, il faut qu'il soit entendu avant d'être répeté; et s'il est mal-entendu, il sera mal répeté: voilà deux organes et deux sources d'altération (Turgot 1756: 106).

This is an indication, or, if we prefer, a very interesting and eventually productive hypothesis, which contemporary linguistics has only in recent years been taking into consideration in the field of studies into the per-

ception of language. With the exception of a few sporadic and isolated
cases (Sechehaye 1908: 163-4, 192), contemporary linguistics is still
orientated towards the speaker and is still anchored to the hypothesis of
the isomorphism between the codes of production and those of percep-
tion, between the grammar of the speaker and that of the receiver.
However, it would be very interesting to develop and verify, in the field
of a theory of execution, the hypothesis as to whether the origins of
change may be found in the perceptive processes of an individual, inter-
acting with those of production, giving rise to the phenomena of syn-
chronic and diachronic changes which occur in natural languages. Ap-
parently, only in recent years has it been assumed that the relationship
between perception and change may be taken as a basis for modern psy-
cho-linguistic research (Bever & Langendoen 1972; Vincent 1974). In any
case, Turgot's intuition anticipates contemporary linguistics (Guiraud
1964: 27).

When we come to the final part of the entry, however, it seems that
the concept of "etymology" has taken on such a wide meaning as to
coincide almost completely with the historical and reconstructive method
applied to the diachronic study of languages.

> L'application la plus immédiate de l'art étymologique, est la recherche des origines
> d'une langue en particulier: le résultat de ce travail, poussé aussi loin qu'il peut
> l'être sans tomber dans des conjectures trop arbitraires, est une partie essentielle de
> l'analyse d'une langue, c'est-à-dire de la connoissance complete du système de cette
> langue, de ses élemens radicaux, de la combinaison dont ils sont susceptibles, etc.
> Le fruit de cette analyse est la facilité de comparer les langues entr'elles sous toutes
> sortes de rapports, grammatical, philosophique, historique, etc. (Turgot 1756: 107).

In just a few lines Turgot outlines the programme which eighteenth and
nineteenth century historical linguistics will carry out on the basis of a
comparative and reconstructive method (the key words in the passage
quoted above are "origines d'une langue", "système de cette langue"
and "comparer les langues"). Moreover, Turgot goes on to outline an
implicit model for an entry in an historical-etymological dictionary of a
language (1756: 109).

Turgot's contribution to the science of etymology and to historical
linguistics completes the epistemological picture of Illuministic linguis-
tics; the works by Étienne Bonnot de Condillac (1714-80), Du Marsais,
Gabriel Girard (1677-1748), Nicolas Beauzée (1717-89), whose ideas are
all found in the various linguistic entries in the *Encyclopédie*, form an
organic body of linguistic doctrine, comprehending a general theory of
language and of a grammar divided both into its different branches —
phonetics and phonology (Beauzée), syntax and semantics (Du Marsais)
— and into its methodological approaches — general and descriptive

grammar (Beauzée, Du Marsais), typology of languages (Girard), historical linguistics (Turgot), etc.; this linguistics in the age of Enlightenment is itself based on the philosophical assumptions of empiricism (Rosiello 1979).

As we know, nineteenth century linguistics developed only the historical and evolutionary aspect of the study of languages; it did not clarify the theoretical aspect of a reflection on language or synchronic and descriptive grammar; it founded and developed only historical-comparative grammar, almost entirely ignoring Turgot's foresights and the doctrine of the *Encyclopédie*. Any solution of continuity among compilers of the *Encyclopédie* and scholars of comparative studies is the creation of Romantic ideology. Only Rasmus K. Rask (1787-1832), who was hardly touched by Romanticism, showed that he was aware of Turgot's contribution to etymology and the historical study of languages (Diderichsen 1974: 294, 301; Droixhe 1978: 215). As for the rest, linguistics born after 1800 "had nothing to do with French thought" (Aarsleff 1982: 6). We have to wait for Saussure's work (1916) for the synchronic aspect to be re-integrated into linguistic theory, and we have to wait for Chomsky's work (1966) which, while being set in an erroneous philosophical and historiographical perspective, marked a revival in the studies of the eighteenth century forerunners of modern linguistics.

REFERENCES

Aarsleff, Hans. 1982. *From Locke to Saussure. Essays on the Study of Language and Intellectual History*. London: Athlone.

Abercrombie, David. 1949. "What Is a 'Letter' ?". *Lingua* 2. 54-63.

Bever, T.G. & D.T. Langendoen. 1972. "The Interaction of Speech Perception and Grammatical Structure in the Evolution of Language". *Linguistic Change and Generative Theory* ed. by Robert P. Stockwell & Ronald K.S. Macaulay, 32-95. Bloomington & London: Indiana Univ. Press.

Brosses, Charles de. 1765. *Traité de la formation méchanique des langues et des principes de l'étymologie*. Paris: Saillant.

Chomsky, Noam. 1966. *Cartesian Linguistics: A chapter in the history of rationalist thought*. New York & London: Harper & Row.

Diderichsen, Paul. 1974. "The Foundation of Comparative Linguistics:

Revolution or Continuation?". *Studies in the History of Linguistics: Tradition and Paradigms* ed. by Dell Hymes, 277-306. Bloomington & London: Indiana Univ. Press.

Droixhe, Daniel. 1971. "'Lettre' et phonème à l'âge classique, avec un essai inédit de Turgot". *Lingua* 28. 82-99.

——. 1978. *La linguistique et l'appel de l'histoire (1600-1800)*. Genève & Paris: Droz.

Du Marsais, César Chesneau. 1730. *Des Tropes, ou des diférens sens dans lesquels on peut prendre un même mot dans une même langue*. Paris (*Oeuvres Choisies* I. Reproduction en facsimilé des textes tirés de l'edition complète de 1797, avec une introduction par H.E. Brekle, 137-396. Stuttgart-Bad Cannstatt: Frommann, 1971).

Guiraud, Pierre. 1954. *Les caractères statistiques du vocabulaire*. Paris: PUF.

——. 1964. *L'étymologie*. Paris: PUF.

Piron, Maurice. 1961. *A.R.J. Turgot: Étymologie*. Edition avec notes par M. Piron. Brugge: De Tempel.

Rosiello, Luigi. 1979. "Syntaxe et sémantique dans les articles linguistiques". *Essais et notes sur l'Encyclopédie de Diderot et D'Alembert*, volume établi par Andrea Calzolari & Sylvie Delassus, 271-86. Milano: Franco M. Ricci.

Saussure, Ferdinand de. 1916. *Cours de linguistique générale*. Lausanne & Paris: Payot.

Sechehaye, Albert Ch. 1908. *Programme et méthodes de la linguistique théorique*. Paris, Leipzig & Genève: Champion, Harrassowitz & Eggimann.

Silvestri, Domenico. 1977. *La teoria del sostrato: metodi e miraggi*. Napoli: Macchiaroli.

Tagliavini, Carlo. 1949. "Di alcune denominazioni della 'pupilla' (Studio di onomasiologia, con speciale riguardo alle lingue camito-semitiche e negro-africane)". AION n.s. 3. 341-78.

Turgot, Anne-Robert-Jacques. 1756. "Étymologie". *Encyclopédie ou dictionnaire raisonné des sciences, des arts et des métiers*. Tome VI. Paris. 98-111. (Nouvelle impression en facsimilé. Stuttgart-Bad Cannstatt: Frommann, 1967.)

Vincent, Nigel. 1974. "Analogy reconsidered". *Historical Linguistics II* ed. by J.M. Anderson & C. Jones, 427-45. Amsterdam, Oxford & New York: North Holland & American Elsevier.

GRAMMAIRE PHILOSOPHIQUE OU DÉCADENCE DE LA GRAMMAIRE ET DE LA PHILOSOPHIE LA GRAMMAIRE EN 1800

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Les principes.

Dès les premières pages de la Préface de l'édition de 1801 des *Elémens d'Idéologie*, Antoine-Louis-Claude Destutt de Tracy (1754-1836) situe la grammaire dans un ensemble orienté par l'analyse de sa genèse et vectorisé par une notion opératoire qui est l'agent et le terme de l'opération de constitution: la connaissance des facultés intellectuelles:

> L'homme par sa nature tend toujours au résultat le plus prochain et le plus pressant. Il pense d'abord à ses besoins, ensuite à ses plaisirs. Il s'occupe d'agriculture, de médecine, de guerre, de politique-pratique, puis de poésie et d'arts, avant que de songer à la philosophie: et lorsqu'il fait un retour sur lui-même et qu'il commence à réfléchir, il prescrit des règles à son jugement, c'est la logique; à ses discours, c'est la grammaire; à ses désirs, c'est ce qu'il appelle morale. Il se croit alors au sommet de la théorie, et n'imagine pas même que l'on puisse aller plus loin. Ce n'est que longtemps après qu'il s'avise de soupçonner que ces trois opérations, juger, parler, et vouloir, ont une source commune; que, pour les bien diriger, il ne faut pas s'arrêter à leurs résultats, mais remonter à leur origine; qu'en examinant avec soin cette origine, il y trouvera aussi les principes de l'éducation et de la législation; et que ce centre unique de toutes les vérités est la connaissance de ses facultés intellectuelles (Destutt de Tracy 1970 [1801-1803], I, Préf.: xiv-xv).

Dans cette conception, écrire une grammaire, c'est viser le fonctionnement de l'esprit humain. Ce qu'endosse explicitement Dieudonné Thiébault (1733-1807) en 1802 en proposant une *Grammaire philosophique ou la métaphysique, la logique, et la grammaire réunies en un seul corps de doctrine*. Et justifie son ambition dans la Préface:

> La Grammaire devait nécessairement être *philosophique*, et non *générale*: on devait s'y proposer [...] de suivre dans les procédés du langage, et d'éclairer par là, la marche, le caractère, les développements, et le perfectionnement de la raison humaine: la nature de l'esprit de l'homme devait en être l'objet et le but; en quoi elle

s'unissait de la manière la plus intime avec la métaphysique et la logique, pour ne plus former avec ces deux autres sciences, qu'un seul corps de doctrine (Thiébault 1977 [1802], Préf.: vii).

Considération qui dicte le plan d'une telle Grammaire philosophique:

Mon cours a dû successivement, établir ou annoncer la liaison et la dépendance mutuelle des parties que j'avais à y faire entrer, contenir ensuite une notion précise et suffisante des opérations et facultés intellectuelles de l'homme, c'est-à-dire, de la métaphysique; après cela, un traité philosophique et grammatical des idées et des mots; un autre traité semblable sur nos jugements et nos propositions; et un autre encore sur les principes et les règles qui concernent les raisonnements et la méthode (p. ix).

Plan qui reprend Destutt: "... toutes les langues ont des règles communes qui dérivent de la nature de nos facultés intellectuelles, et d'où découlent les principes du raisonnement" (Destutt de Tracy 1970 [1801-1803], I, Préf.: xxiii).

Plan qui s'intègre nécessairement dans un système éducatif puisqu'il est nécessaire à la formation du citoyen: "... cette connaissance non-seulement est nécessaire à l'étude des langues, mais encore est la seule base solide des sciences morales et politiques" (pp. xxiii-xxiv).

La Grammaire, étude de la langue, est donc au centre du dispositif. Lieu paradoxal, puisqu'en tant que science elle est une analyse, mais analyse d'un objet, le langage qui est lui même un système analytique de nos facultés intellectuelles. Commentaire sans cesse renouvelé du célèbre principe de Étienne Bonnot de Condillac (1715-80): "Toute langue est une méthode analytique, et toute méthode analytique est une langue" (Condillac 1798 [1981]: 1).

Ce qui entraîne plusieurs conséquences:
(1) La logique se définit par rapport au langage:

La *logique* est *l'art de discourir*, c'est-à-dire, *l'art de penser et de parler*. [...] L'objet de la logique [est] de nous apprendre les règles qu'il faut suivre [...] pour diriger et perfectionner l'usage de nos facultés intellectuelles, soit en ne les considérant qu'en elles-mêmes et dans les actes intérieurs de l'esprit, soit en les considérant dans la manifestation que nous avons à en faire, telle qu'elle existe dans le langage (Thiébault 1977 [1802], II: 1).

(2) Une conséquence négative en est qu'une part traditionnellement notable de la logique, l'étude du syllogisme, tend à dépérir. L'argumentation en forme, comme dit Thiébault, n'est qu'un arrangement artificiel et peu fidèle du raisonnement:

Enfin les progrès de la raison nous [ont] fait appercevoir que ce philosophe [Aristote] et ses disciples, avaient attaché trop d'importance à des règles très-ingénieuses sans doute, mais plus fines qu'utiles ou nécessaires. Condillac dans ces derniers temps, est celui qui a achevé de ruiner ce système d'*arguments en forme* [...] en y

substituant l'art analytique dont il nous a donné tant et de si précieux modèles (II: 110).

Une conséquence positive en est le lien obligé établi entre la logique et la syntaxe qui fait de la Syntaxe "la partie la plus essentielle de la Grammaire, celle pour laquelle les autres existent, et sans laquelle celles-ci seraient entièrement inutiles (II: 2) — renversement complet par rapport à la Grammaire classique. Encore la Grammaire de Port-Royal ne consacrait qu'un chapitre de quelques pages à la Syntaxe. Position ainsi justifiée:

> La *syntaxe* a donc pour objet de nous apprendre comment les langues parviennent à exprimer toutes les espèces de rapports dont la perception constitue la raison humaine; et la *logique* a pour but de nous donner les règles propres à développer, rectifier, et perfectionner l'exercice des facultés qui nous font découvrir ces mêmes rapports. En nous rendant ce premier service, la logique y en joint encore un autre, qui en est la suite, celui de répandre un grand jour sur la doctrine que renferme la syntaxe, et de justifier les langues dans le choix et l'usage des procédés qu'elles ont adoptés, justification qui résulte de la comparaison de ces procédés avec la base sur laquelle ils se fondent, et avec le but où ils doivent nous faire aboutir (*ibidem*).

(3) Cette confrontation pose nécessairement le problème de la valeur représentationnelle des langues et particulièrement conduit à confronter ici langues naturelles et langues artificielles. Une longue note de Destutt est ici très éclairante; on tentera de la découper significativement:

> La langue algébrique ne s'applique qu'à des idées de quantité, c'est à dire à des idées d'une seule espèce, qui ont entr'elles des rapports très-fixes et très-précis [...] Il n'y a jamais ni incertitude, ni obscurité, ni variation dans la valeur des éléments du discours de cette langue, et il en résulte un effet tout particulier, c'est qu'on n'a jamais besoin de songer à la signification de ces signes pendant tout le temps qu'on les combine [...] Pourvu qu'on ait observé scrupuleusement les règles de la syntaxe de cette langue, qui ne sont autre chose que les règles du calcul, on est certain d'arriver à une conclusion juste; c'est-à-dire exactement qu'on n'a eu nul besoin de savoir ce qu'on disait pendant tout le temps qu'on a raisonné [...] Les mots sont bien des formules qui peignent d'une manière abrégée les résultats de combinaisons antérieurement faites [...]. Mais les résultats que ces mots expriment ne sont pas d'une nature aussi simple ni aussi précise que ceux que représentent les caractères algébriques. [...] Ces modifications des caractères algébriques sont toutes appréciables en nombres; celles des mots ne le sont pas, et c'est là une différence immense. [...] Nous nous fions bien aux mots comme à des formules trouvées; nous sommes bien obligés de nous en servir en cette qualité, puisque c'est là leur seule utilité en tant que moyens d'analyse (Destutt de Tracy 1970 [1801-1803], I: 340-49 n. 1).

Logique, syntaxe et sémantique.

Par cette insistance mise sur la signification des mots qui la lie à chaque opération de langage, Destutt relie logique et syntaxe à une interpré-

tation sémantique dont il remarque qu'elle est variable puisqu'en emploi le sens du mot peut varier en extension et en compréhension. Opération qui implique des recouvrements avec la rhétorique, science du discours et de la disposition des mots en textes. La formalisation est renvoyée du côté de la quantification et de l'algèbre. Cette coupure est de conséquence puisqu'elle enclôt la logique dans la signification référée aux combinaisons de langage, mais aussi qu'elle lie la syntaxe, partie fondamentale de la grammaire, à la construction des valeurs de signification. Et conduit donc la syntaxe à devoir endosser des valeurs ambiguës; si précises que soient les langues, elles ne peuvent jamais atteindre l'état de système simple univoque:

> Sans doute il est possible d'améliorer les signes dont se composent ces langues et de régulariser leur syntaxe et cela serait très-avantageux; mais on ne peut pas faire que toutes les idées que ces langues élaborent aient le même degré de fixité et de précision, et que tous les rapports sous lesquels on considère ces idées soient également simples et déterminés (*ibidem*, p. 346).

La construction d'une syntaxe ainsi conçue requiert deux préalables tout à fait nouveaux par rapport à la grammaire classique de type gréco-latin:
(1) Puisqu'il s'agit de repérer dans la langue la marque des rapports que nous apercevons entre nos idées, la notion de "partie du discours" devient secondaire. Une fois posée la relation sujet-prédicat qui constitue le jugement, on classe les divers compléments qui sont autant de rapports de signification correspondant à deux types logiques: l'identité et la détermination:

> Or il est évident qu'on ne pourrait reporter ces règles, dans les chapitres consacrés à chacune de ces mêmes classes de mots, sans fatiguer le lecteur de redites toujours plus fastidieuses; il faut donc les réunir dans des chapitres ou articles généraux (Thiébault 1977 [1802], II: 6).

C'est dire qu'on s'oriente vers une grammaire fonctionnelle.
(2) La "construction" devient un préalable à l'explication des rapports. Elle vise à rendre patente l'analogie de la langue et des rapports entre les idées:

> Ce procédé leur a paru propre à faire plus sensiblement démêler et distinguer la juste valeur des diverses formes des mots, et les loix établies à ce sujet: ils ont donc rangé tous les mots d'une phrase, dans l'ordre le plus simple et le plus familier aux langues analogues; c'est-à-dire dans l'ordre que réclament les rapports que ces mots ont entr'eux (II: 7).

Si l'ordre des mots ne suffit pas à dénoncer les rapports, on ajoutera des éléments supplétifs qui devraient suffire à les éclairer. Les propositions de Gabriel Girard (1677?-1748) dans les *Vrais principes de la Langue*

française de 1747, celles de César Chesneau Du Marsais (1676-1756) à l'article "Construction" (Du Marsais 1797, I: 43-95), analyses fondatrices, sont exploitées et intégrées cinquante ans plus tard. Elles conduisent: a) à ébaucher la possibilité d'un discours métalinguistique rédigé dans les formes de l'objet même, entendez la langue et donc à trouver un point de résolution du statut ambigu de la grammaire qui était souligné dans les premières lignes de cet article; b) à définir par là une langue de référence qui permettra de construire une typologie des langues et des niveaux d'analyse. A l'aube du comparatisme, c'est là une décision importante pour le développement de la science linguistique qui sera d'ailleurs faiblement exploitée; c) à isoler la future analyse grammaticale de l'analyse de type logique. Thiébault montre en effet qu'une fois le cadre défini on peut reprendre tous les mots "pour en indiquer la classe ou l'espèce, la valeur et les accidents" (Thiébault 1977 [1802], II: 8). Distinction qui sera immédiatement exploitée dans les grammaires destinées aux lycées impériaux quelques années plus tard et qui deviendra la base de l'enseignement grammatical en France (V. Chevalier 1979).

Un exemple: l'analyse des jugements.

Un exemple permettra de saisir mieux sans doute comment fonctionnent, dans la pratique grammaticale de Thiébault, les divers concepts mis en place et, en particulier, comment jouent les trois domaines de la Grammaire, de la Logique et de la Rhétorique. On s'attachera au chapitre intitulé: "Des Jugements et des diverses parties qui peuvent y entrer". La définition du Jugement est de type logique, reposant sur le contenu donné à la notion de convenance: deux idées conviennent quand l'une fait partie de la compréhension de l'autre ou, par élargissement (par "application") lorsqu'elle est comprise dans son extension ("L'homme est mortel" / "Cet homme est Cesar"). Mais Thiébault ajoute:

> Il faut joindre de plus toutes celles qui sont ou naturelles, ou accidentelles, ou accessoires [...] et qui résultent de la position respective des objets, et de tant d'autres relations ou déterminations que notre esprit y attache, de manière à en rendre les convenances également *identiques* (Thiébault 1977 [1802], II: 9).

C'est dire que pour interpréter cette notion de convenance, il faut apprécier la signification du discours en le mettant en rapport avec la situation de parole, le code culturel, etc. En l'absence d'une théorie de la signification (sémantique) ou d'une théorie de l'action (pragmatique), ce concept de convenance tend au flou. Les promoteurs du couple convenance / disconvenance estiment cependant qu'il permet de juger du vrai

et du faux. On remarquera que cette analyse est le lieu d'une confusion entre les possibilités d'une appréciation du vrai et du faux assumées par la langue et l'opération même de détermination du vrai et du faux assumée par la logique. Confusion qui a fait fortune et qu'on retrouve encore aujourd'hui dans certaines analyses sémiotiques.

L'expression de la convenance n'est pas non plus dépourvue d'ambiguïté. Composée en principe de trois membres, appelés par Thiébault comme naguère par François-Urbain Domergue (1745-1810) (1799: 11) judicande, judicat et judicateur, cette formule souffre de nombreuses exceptions "dans le discours". L'ordre tout d'abord peut en être inversé ("C'est de la grêle qui tombe"), mais surtout on constate de nombreuses réductions ou expansions. La décomposition attribuée aux lois de l'analyse selon Condillac se plie aux besoins de la conviction et de la persuasion. Un seul mot peut représenter toute une pensée et c'est l'auditeur qui est tenu de reconstituer tout le raisonnement:

> Toutes ces pensées ne sont jetées ici que par des mots uniques, qui n'ont pas sans doute par eux-mêmes le pouvoir de nous les retracer, mais qui nous les offrent à l'aide des circonstances que nous connaissons d'ailleurs. Ce sont donc les circonstances qui parlent alors, et qui suppléent à toutes les omissions ou réticences que l'on se permet (Thiébault 1977 [1802], II: 12).

La production de phrase dépend de la situation, des interlocuteurs, de la direction argumentative, e.t.c. C'est bien la rhétorique qui est ici massivement introduite:

> Ce sont les circonstances, c'est le besoin ou le désir d'expliquer plus clairement telle ou telle idée, le besoin ou le désir de la déterminer avec plus de précision, qui nous conduisent à toutes les décompositions, que les idées générales ou communes à plusieurs objets, et les idées relatives, exigent plus ordinairement que toute autre (II: 13).

Toutes ces décompositions qui sont aussi des additions (aussi les nomme-t-on "compléments") relèvent autant de la logique (ainsi l'étude de la relation et de ses différents types: simplement relatives, réciproquement relatives, relatives en sens opposé, soit *utile, frère, père*, e.t.c.) que de la rhétorique (ainsi les différents compléments du verbe qui répondent aux différentes "manières de déterminer ou d'expliquer un sens obscur": les compléments objectif ou primitif, terminatif ou secondaire, de cause, d'auxiliarité, de modification, de temps, de lieu, etc.). Elles permettent toutes de former la pensée, de définir l'analyse des hiérarchies; aussi les nomme-t-on *parties intégrantes*. Ce qui conduit le grammairien-philosophe à en distinguer les *parties similaires* qui, quoique différentes, sont réunies par l'esprit pour entrer dans un même jugement. Exemple: "La liberté, la bonne réputation, la santé, et la fortune sont plus ou moins

nécessaires au bonheur.'' Intéressante décision qui va permettre de dégager une partie jusqu'ici très floue dans les grammaires et qu'on appellera les conjonctions de coordination (II: 18).

Ce jeu de notions et concepts logiques et rhétoriques vient s'intégrer, autant qu'il est possible, dans des divisions grammaticales, entendez qui mettent en cause la morphologie et les procédures d'agrégation que les formes permettent d'engager. La notion de fonction doit s'intégrer dans les ensembles traditionnels de la ''syntaxe'':

> Tous les *compléments* dans le discours ne remplissent pas leurs fonctions de la même manière, puisqu'ils ne sont pas tous de la même espèce. Les uns sont des *compléments identiques*, et les autres des *compléments relatifs*: ceux-là sont soumis en Grammaire aux lois de la *concordance*, et ceux-ci aux lois du *régime*. Ainsi *l'identité* qui a lieu entre les idées qui concourent à former l'idée totale d'un seul et même objet, assujetit les mots secondaires ou accessoires qu'on emploie, aux formes que prend le mot principal dont ils relèvent: ce qui établit un accord parfait entre tous ces mots, conformément à l'accord qui se trouve entre les idées [...]; et le *régime*, qui a lieu entre les idées diverses, mais liées les unes aux autres par des rapports qu'il est utile ou nécessaire de remarquer, n'assujetit les mots complémentaires auxquels il fait recourir, qu'à prendre les formes prescrites à cet effet, formes variables selon les espèces de rapports ... (II: 16).

De la même façon et sur le même plan

> les grammairiens distinguent d'abord les régimes *simples* ou *directs*, c'est-à-dire ceux qui n'ont à leur tête aucune préposition, ni exprimée, ni sous-entendue; en second lieu les régimes qu'ils appellent *composés* ou *obliques* [...] Lorsque ces deux régimes se rapportent à un verbe, on les distingue par d'autres noms: le régime simple se nomme alors *objectif*, et *primitif* etc (II: 18).

Sommet de cette entreprise, la possibilité d'entreprendre une décomposition raisonnée de la phrase, de complément en complément jusqu'à ce que toute la pensée soit rendue dans toute la plénitude que l'on veut (II: 21).

Entreprise ambitieuse puisqu'elle vise à conjoindre logique, rhétorique et grammaire pour montrer les correspondances des plans d'analyse à l'oeuvre dans l'émission d'un discours. Puisqu'elle doit permettre à la fois une évaluation de la vérité du discours et une évaluation de la qualité du style. Condillac dit bien que c'est dans le langage qu'on découvre les modes de la pensée:

> L'analyse de la pensée est toute faite dans le discours. Elle l'est avec plus ou moins de précision, suivant que les langues sont plus ou moins parfaites et que ceux qui les parlent ont l'esprit plus ou moins juste. C'est ce qui me fait considérer les langues comme autant de méthodes analytiques (Condillac 1798 [1775], V: 4).

Suite naturelle des conceptions de Port-Royal, comme le rappelle Condillac: ''Puisque les mots sont les signes de nos idées, il faut que le sys-

tème des langues soit formé sur celui de nos connaissances'' (p. 31).

Mais interprétation très originale qui approfondit Locke en définissant pour chaque état de langue un vecteur historique prenant en compte le développement de l'individu d'abord:

> Comment pourrons-nous faire avec art d'autres décompositions pour acquérir de vraies connaissances? C'est encore en observant l'ordre que la nature nous prescrit elle-même. Mais vous savez que cet ordre est celui dans lequel nos idées naissent les unes des autres conséquemment à notre manière de sentir et de concevoir. C'est donc dans l'ordre le plus conforme à la génération des idées que nous devons analyser les objets (V: 55-56).

Mais aussi l'ordre de la civilisation:

> Les langues sont donc plus ou moins parfaites, à proportion qu'elles sont plus ou moins propres aux analyses. Plus elles les facilitent, plus elles donnent de secours à l'esprit. En effet, nous jugeons et nous raisonnons avec des mots, comme nous calculons avec des chiffres; et les langues sont pour les peuples ce qu'est l'algèbre pour les géomètres. En un mot, les langues ne sont que des méthodes, et les méthodes ne sont que des langues (V: xlii).

Une théorie des niveaux.

Ce qui conduit à distinguer et à hiérarchiser différents types de discours. Tout d'abord à fixer la supériorité de l'écrit par rapport à la parole, puis d'un beau langage par rapport au langage ordinaire. Comme marqué respectivement dans ces deux citations:

> L'art de parler n'est donc que l'art de penser et l'art de raisonner, qui se développe à mesure que les langues se perfectionnent, et il devient l'art d'écrire, lorsqu'il acquiert toute l'exactitude et toute la précision dont il est susceptible (V: xxxvii).
> Avant d'étudier les règles de l'art de parler, il faut être familiarisé avec les beautés du langage (V: cxxxiv).

Le domaine de langage dans lequel opère l'analyste de la pensée est donc strictement délimité. Se justifiant par une analyse génétique, Condillac voit dans l'écrit un aboutissement de la parole — intermédiaire —, écrit qui est lié en tant que signe au dessin comme la parole est liée au cri, conception qui s'encastre entre la Théorie des Hiéroglyphes, constamment reprise au XVIIIème siècle et les considérations qu'A. Comte consacre au langage dans son *Système de politique positive* (V. Chevalier 1977). Le rapport avec une esthétique de la langue est plus ambigu. Condillac, et, après lui, la plupart des Idéologues se défient des langages captieux, lieu des émotions perverses et de toutes les démagogies. Le premier, Condillac écrit dans *l'Art de Penser*:

Or, quand on se fut assuré de satisfaire aux besoins de première nécessité, on s'en fit de moins nécessaires encore et l'on vint par degrés à se faire des besoins de pure curiosité, des besoins d'opinion, enfin des besoins inutiles, et tous plus frivoles les uns que les autres.

Alors on sentit tous les jours moins la nécessité d'analyser: bientôt on ne sentit plus que le désir de parler, et on parla avant d'avoir des idées de ce qu'on voulait dire. [...] Alors un premier jugement faux en fit porter un second, et bientôt on en fit sans nombre. [...] Voilà ce qui est arrivé aux philosophes mêmes. Il n'y a pas bien longtemps qu'ils ont appris l'analyse; encore n'en savent-ils faire usage que dans les mathématiques, dans la physique et dans la chimie. Au moins n'en connais-je pas qui aient su l'appliquer aux idées de toutes espèces. Aussi aucun d'eux n'a-t-il imaginé de considérer les langues comme autant de méthodes analytiques (Condillac 1798, VI: 121-22).

Les grands textes des Belles-Lettres sont pour Condillac un moyen remarquable d'aborder par l'expérience une analyse qui découvre l'art de raisonner:

Nous [le jeune Prince de Parme et lui] lûmes quelques comédies de Molière, quelques tragédies de Corneille, quelques-unes de Racine, et nous nous fimes l'idée d'un drame. Le prince comprit comment une action s'expose, s'intrigue, se dénoue; il vit comment les événements se préparent, comment ils sont amenés sans être prévus; il remarqua l'art avec lequel on soutient un caractère (Condillac 1798 [1775], V: cxxviii) [...] L'art de raisonner, ou l'art de conduire son esprit dans la recherche de la vérité, n'est pas un art nouveau pour quelqu'un qui connait déjà les opérations de son âme, et dont le goût commence à se former (p. cxxxviii).

Les manuels qui vont être produits pour l'enseignement du français dans les lycées impériaux tireront de ces considérations l'essentiel de leur méthodologie et fonderont un type nouveau de grammaire, encore en usage et reçu généralement sous le nom de "grammaire traditionnelle". La grammaire sera alors tenue pour un instrument d'apprentissage de la pensée et de l'expression conjointement, l'analyse comme le lieu d'une méthodologie permettant d'aborder efficacement les autres disciplines dépendant du jugement. Elle sera un lieu de transfert remarquable entre ces diverses disciplines et constituera le pivot de l'apprentissage des méthodologies. Mais le prix à payer est lourd, le déficit étant noté par les protagonistes mêmes de l'entreprise. Lourd pour la logique d'abord qui apparaît clivée comme le marque avec une particulière netteté la note de Destutt de Tracy: opposée aux démarches quantifiées, celle dont il est question ici est une logique sémantique entièrement ramenée au langage en situation, c'est à dire au discours et par là impossible à formaliser (V. Auroux 1982). Uniquement soutenue de la perfection de la langue française, elle ne tire sa justification que de ce postulat idéologique et est par là non seulement condamnée au dépérissement, mais à la cécité du côté d'autres types de logiques. Lourd du côté de la rhétorique aussi qui se trouve ramenée à un jeu de significations contingentes, appuyées pour

méthode d'une part sur une psychologie un peu fuyante justifiée par les évocations de la genèse de la pensée, d'autre part sur un domaine des Belles-Lettres qui en présente un modèle remarquable, à l'avance figé sur un recours au classicisme censé incarner la perfection d'un modèle. Dans cet ensemble, la littérature ne peut être envisagée comme un se faisant, mais comme un déjà fait. Lourd enfin pour la grammaire condamnée à un jeu de passe-passe entre les deux plans de la pensée et de l'expression, condamnée aussi à définir perpétuellement une norme qui permettra aux systèmes consubstantiels de fonctionner. Ici aussi le clivage qui s'annonce entre une grammaire comparatiste qui visera à découvrir des règles de fonctionnement rigoureuses grâce à la comparaison entre les langues d'une part, comparaison rendue possible par la limitation du champ aux éléments de base (morphologie, mais surtout phonétique) et autorisant des espoirs de formalisation et d'autre part une grammaire du discours, essentiellement française (répondant à l'"ère française" proclamée par Destutt de Tracy (1970 [1801-1803], II: 10) qui ne fonctionnera que sur exemples attestés, littéraires surtout, s'annonce tout au désavantage de la seconde.

Que le choix français s'explique par des considérations politiques et idéologiques, c'est là un fait certain et qui est proclamé par les protagonistes mêmes. Ainsi Antoine-Isaac Silvestre de Saci (1758-1838), l'illustre orientaliste, qui écrit en tête de ses *Principes de grammaire générale* en dédicace à son fils:

> Dans quelque état que tu sois appelé à servir la patrie, tu recueilleras les fruits de cette méthode, propre à former le jugement, et qui ne peut que contribuer à préserver le coeur des illusions et de l'enchantement des passions (Silvestre de Saci 1815, Préf.: 2).

Comment une grande ambition devient un obstacle épistémologique.

Pour le grammairien-philosophe, le travail primordial est voué à l'amélioration de la société et à la formation du citoyen apte à comprendre le fonctionnement du monde au travers du discours et à utiliser un langage qui soit l'expression de la vérité. Que cette détermination politique et idéologique soit redoublée par un système d'enseignement, tel qu'il est imposé par Napoléon dans les lycées, qui sépare lettres et sciences, et qui refoule la recherche en l'isolant dans quelques institutions prestigieuses comme les Instituts ou le Collège de France, un système qui refoulera sans relâche le développement d'Universités comme lieux de confrontations et d'échanges, cela est non moins certain. Il n'en reste pas moins qu'un tel dispositif constituait un obstacle épistémologique de

taille et pour le développement d'une logique formelle et pour la fondation d'une linguistique scientifique en France.

BIBLIOGRAPHIE

Auroux, Sylvain. 1982. *L'Illuminismo francese e la tradizione logica di Port-Royal*. Bologna: CLUEB.

Chevalier, Jean-Claude. 1977. "Langage, biologie des origines et sociologie des développements", *Revue des Sciences humaines* 166. 227-40.

——. 1979. "Analyse grammaticale et analyse logique: examen d'un dispositif scolaire", *Pratiques* 22-23. 147-59.

Condillac, Étienne Bonnot de. 1798 (=an VI) [1775]. *La grammaire* (= *Oeuvres complètes*, V.) *L'Art de Penser* (= *Oeuvres complètes*, VI.) Paris: Ch. Houel.

——. 1981 [1798]. *La langue des calculs*. Éd. critique par Sylvain Auroux et Anne-Marie Chouillet. Lille: Presses Universitaires de Lille.

Destutt de Tracy, Antoine-Louis-Claude. 1970 [1801-1803]. *Éléments d'Idéologie*. Introduction et appendices par Henri Gouhier. 2 vols. Repr. anast. de: *Élémens d'Idéologie*, Première Partie, *Idéologie proprement dite*, 3ᵉ éd., Paris: Courcier, 1817; Seconde Partie, *Grammaire*, 2ᵉ éd., *ibid.*, 1817. Paris: J. Vrin.

Domergue, François-Urbain. 1799 (=an VII). *Grammaire générale analytique*. Paris: Ch. Houel.

Du Marsais, César Chesneau. 1797. *Oeuvres*. 7 vols. Paris: Pougin.

Girard, Gabriel abbé. 1982 [1747]. *Les vrais principes de la langue françoise*. Précédés d'une introduction par P. Swiggers. Genève: Droz.

Silvestre de Saci, Antoine-Isaac. 1815 [1799]. *Principes de grammaire générale*, 3ᵉ ed. Paris: A. Belin.

Thiébault, Dieudonné. 1977 [1802]. *Grammaire philosophique, ou la métaphysique, la logique et la grammaire réunies en un seul corps de doctrine*. Avec une introduction par Daniel Droixhe. Nouvelle impression en facsimilé. Stuttgart: Frommann Holzboog.

KANT ON LOGIC, LANGUAGE AND THOUGHT

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I

LOGIC AND LANGUAGE

I.1. *Logic and grammar*

As we can read in Kant's *Logik* and in some lecture notes taken by students who attended his courses on logic, Kant (1724-1804) never introduced the subject with a definition, but with a reference to regularity. By diminishing degrees of generality he used to mention the regularity of the physical world, of animal motion and, finally, of what is most typical of man: his language. [1]

In some preparatory notes for his lectures Kant wrote as if addressing his students:

> [...] haben sie manche Jahre gesprochen, aber über die Sprache nicht nachgedacht [...] Dennoch haben sie bey Erlernung einer todten Sprache gefunden, dass sie (an) gewissen bestandigen Regeln gebunden sey, ohne die sie nicht Sprache, d.i. Mittheilung seiner Gedanken seyn könte. (Also haben sie die Regeln einer Sprache befolgt, ohne diese Regeln selbst namhaft machen zu können. (Moliere — bürgerlicher Edelmann — Prosa reden — also Grammatisch reden)). Sprache ist aber Mittheilung der Gedanken. Also wird das Denken auch bey allen Menschen an gewisse Regeln gebunden seyn. (Die er auch nicht namhaft machen kan, ob er sie zwar lange befolgt hat). (*R.* 1620, Ak. XVI: 39-40). [2]

Thus the rules implicitly followed by every speaker are the grammatical rules that one usually becomes aware of when learning a dead language. For dead languages, on the one hand, are taught beginning with their grammar rather than with the practice of speaking; on the other hand, being no longer subject to change, they easily reveal their crystallized grammatical structure. [3] Once we have acknowledged this structure

— Kant argues — it is not difficult to admit the existence of a deeper level of logical rules governing our thought, since language is communication of thought. And this priority of the acknowledgment of grammatical rules over that of the logical ones does not belong only to our private experience but, according to Kant, is part of the history of culture. In one of his handwritten notes of the eighties he observes in fact that "Die Grammatiker waren die erste Logiker" (R. 1622, Ak. XVI: 42).[4]

This happens because grammar and logic have much in common. Above all they are both formal, in the Kantian sense that both study the forms of language and thought, respectively. It is because grammar is a formal discipline that "durch blosse Grammatic kan man keine Sprache lernen" (R. 1628, Ak. XVI: 45).[5] But certainly grammarians are not interested in teaching languages: if anything, they want to develop a universal grammar that "enthält nicht Wörter, nicht copia vocabularum, sondern nur die Form der Sprache" (L. Dohna-W., Ak. XXIV: 693).[6]

All the same Kant leaves no doubt as to the fact that, while grammar depends on experience, logic is absolutely independent of it. According to L. Busolt:

> Die Grammatik ist [...] nur eine Disciplin, die Logik eine Wissenschaft; Doktrin. Der Unterschied zwischen Disciplin und Wissenschaft oder Doktrin ist der; Bei der ersteren kann man nicht wissen, warum etwas so und nicht anders ist, bei der andern aber hat man einen inneren Beweiss davon. bei der erstern Consultiren wir die Erfahrung, bei der andern den Verstand allein, die erstere ist besonders die andere allgemein, die erste heisst Scientia empirica, die andere Scientia scientifica (Ak. XXIV: 609).[7]

In other words we may well become aware first of grammatical rules and only afterwards of logical ones, and develop a science of grammar before a science of logic, but this does not make grammar any less empirical or logic any less a priori.

Thus, despite their common formal and scientific character, logic and grammar are of a very different nature. In particular while grammar, being empirical, cannot be disconnected from historically given languages, logic, being a priori, must be treated independently of them: language has no influence on the rules of thought nor on the science of them, that is, logic.

This explains why Kant's stress on language at the very beginning of his courses on logic is not renewed when he finally expounds his concept of logic. Logic is an a priori science that aims at resolving "the whole formal procedure of understanding and reason into its elements" (A60 = B84) and is not concerned with our linguistic expressions. Its rôle with respect to knowledge is that of a "negative touchstone of truth"

(*ibid.*) or a canon of understanding and reason "but only in what is formal in their employment" (A53 = B77).

I.2. *Against dialectic: logic is not an 'ars disputatoria'*

This means that, with respect to the traditional partition of logic in analytic and dialectic, logic as a *scientia scientifica a priori* can only be an analytic. Analytic in fact is a "logic of truth" that contains "the necessary rules" — and therefore is a *scientia scientifica* — of "all formal truth" — and therefore is an *a priori* canon.

Dialectic, on the contrary, not only wants to be decisive for the truth of the content of our knowledge while claiming to be a logic, but tries to succeed in this intent by ignoring the distance between logic and language. For dialectic exploits the acknowledged non-empirical character of logic in order to avoid dealing with facts, and at the same time identifies 'non-empirical' with 'discursive' rather than with 'formal'. Thus dialectic does not deal, like logic, with the form of thought nor, like contentual (synthetic) knowledge, with sensibility,[8] but rather with *words*.

Now, since out of a merely formal dimension logic is impotent with respect to truth, dialectic — which as a presumptive logic disregards facts — looses any real connection with truth, formal or otherwise, and reveals itself to be

> a logic of *semblance* [*Schein*] (*ars sophistica, disputatoria*) which springs from a mere abuse of the analytic, inasmuch as the semblance of a true cognition, whose characteristics must be taken from agreement with objects and therefore from *content*, is contrived after *the mere logical form* (*L.*, Ak. IX: 16; *HS*: 19).

This nature of dialectic is, for Kant, the result of a process, or better a degeneration, that began already in ancient Greece. At first, in fact, dialectic "meant the art of the pure use of the understanding in respect of abstract concepts segregated from all sensibility" (*L.*, Ak. IX: 28; *HS*: 32).[9] But subsequently

> when the philosophers who altogether rejected the testimony of the senses had, of necessity, to resort to many subtleties, dialectic degenerated into the art of asserting and disputing any proposition (*L.*, Ak. IX: 28; *HS*: 32).

Briefly dialectic became an *ars disputatoria* among philosophers who, rejecting "the testimony of the senses", would not find truth in the agreement of our cognition "with objects" (*L.*, Ak. IX: 16; *HS*: 19) but resorted to verbal arguments, "mere talk" (A61 = B85). Then it was only too easy for "advocates and orators" (*L.*, Ak. IX: 17; *HS*: 19) to appropriate dialectic for their own aims, such as confusing a jury or win-

ning an audience against an opponent regardless of truth. [10] Just as it was almost inevitable for dialectic to become an instrument used by sophists "who wanted to argue about everything and tried to give the varnish of truth to illusion and turn black into white" (*L.*, Ak. IX: 28; *HS*: 32).

The fact that dialectic has become an art of disputation — Kant concludes — has made it quite different from the ancient sceptical method of examining philosophical questions from two opposite sides: one thing is *controvertiren* "um der Wahrheit willen"; another thing is *disputiren* "um der Rechthaberey, d.i. der Obermacht im streit" (*R.* 3473, Ak. XVI: 857). [11] And, above all, the transformation of dialectic into an *ars disputatoria* has not turned it into a logic: if anything it has turned it into a presumptive logic born out of an abuse of the analytic. For dialectic *a*) uses "the methodical thoroughness which logic prescribes" (A61 = B85) only to gain an appearance of rigour, and what is more, *b*) disregards the veto on mixing logic with language while abusively retaining the name and the prerogatives of logic (especially that of ignoring the testimony of the senses) and *c*) claims to be an organon rather than a canon of truth.

These traits, according to Kant, are particularly evident in topic, the theory of *loci* of dialectical and rhetorical argumentation. For he sees topic as nothing but a technique

> of which teachers and orators could make use in order under given headings of thought to find what would best suit the matter in hand, and then, with some appearance of thoroughness, to argue or be eloquent about it (A268-9 = B324-5).

Therefore, far from being a logic, dialectic (and topic) has a much greater affinity with rhetoric and even eloquence, which in fact is qualified by Kant as

> eine K u n s t zu b e r e d e n und dialectisch, also schädlich. Auch hat die rhetorik sowohl im Staat als Wissenschaften [auf] der Religion, der philosophie immer Verderben zugezogen: Demosthenes, Carneades, Cicero (*R.* 3444, Ak. XVI: 840). [12]

True, on occasion Kant praises the famous dialectician Ramus (1515-1572), but only because he considers him as a champion of antischolasticism. [13] Here he was demonstrably influenced by the account of the history of logic given by G. Daries (1714-92) who, in his turn, literally transcribed the opinions expressed on such matters by the anti-scholastic Gassendi (1592-1655; cf. Micheli 1980: 136 ff.). But dialectic as an art of disputation was never the object of Kant's praise, and the name of Ramus was never accompanied in Kant's various reconstructions of the history of logic by those of other dialecticians like, for instance, Vives (1492-1540) and Valla (1407-57), although these were mentioned in the

logic textbook of Martin Knutzen (1720-56), his first logic teacher. [14]
Kant's opposition to the mingling of logic with language, and conse-
quently to dialectic as an abusive logic of discourse, is firm and total, to
the point of labelling dialectic as an art "quite unbecoming the dignity
of philosophy" (A62 = A86). (Cf. also *L*, Ak. IX: 17; *HS*: 19).

I.3. *Against dialectic: probability belongs to analytic*

Now, could it not be that dialectic could still be considered as a legit-
imate logic at least of 'probable' knowledge and, as such, complemen-
tary to the logic of demonstrative truth or analytic?
Kant obviously knew that, according to a tradition which included
the textbook he was lecturing on, dialectic had been intended not only
as an art of disputation, but also as an organon dealing with things per-
taining to opinion and capable of obtaining probable knowledge where
demonstrative truth was impossible. [15] Nevertheless he intentionally
severed the link between dialectic and probability and, as we shall see
later, he did so, once again, because of his refusal of a presumptive
logic of the use of ordinary language.
Kant's argument for his thesis is grounded on a precise definition of
probability. Once established that we have certainty of something when
we have sufficient reasons for holding it to be true, probability [*Wahr-
scheinlichkeit, probabilitas*] can be defined as the holding-to-be-true
[*Fürwahrhalten*] of something on the basis of insufficient reasons which,
however, can be compared with the reasons that would be sufficient for
certainty. In Kant's own words:

> in probability there must always be a standard by which I can estimate it. This
> standard is *certainty*. For as I shall compare the sufficient with the insufficient rea-
> sons, I must know how much is required for certainty (*L.*, Ak. IX: 82; *HS*: 89).

Thus the probability of a certain result in a game of dice can be rep-
resented as

> ein Bruch, dessen Nenner die Zahl aller möglichen Fälle ist, und dessen Zähler die
> Zahl der Treffer enthält. Z.B. wenn einer mit 2 Würffeln 8 werfen soll: so hat er 6
> Treffer, und 36 mögliche Fälle. Der Bruch ist also 6/36, wovon der Gegner 30 und
> er 6 Fälle hat (*Wiener L.*, Ak. XXIV: 880). [16]

Given this concept of probability one can understand why Kant de-
nies that it requires any special logic, different from the usual logic of
truth or analytic. In the above mentioned example we know for true
that we have 6/36 chances of throwing 8 with 2 dice and we know that
any other result is false. Here "Das object ist wahrscheinlich; aber unse-

re Erkenntnis [...] ist wahr'' (R. 2599, Ak. XVI: 435). [17]

Kant is perfectly aware, however, that when dialectic is proposed as a *logica probabilium* it is intended for cases that do not allow a comparison of the insufficient reasons for holding something to be true with the reasons that would be sufficient for certainty. Dialectic as a *logica probabilium* is meant for cases where one simply has insufficient reasons *pro* and *contra* holding something to be true and has to decide which ones are *comparatively* greater.

Kant's objection is that in such cases there is no question of probability proper: one should speak instead of verisimilitude [*Scheinbarkeit, verisimilitudo*] which in fact he defines as ''a holding-to-be-true out of insufficient reasons so far as these are greater than the reasons of the opposite'' (*L.*, Ak. IX: 81; *HS*: 89). A typical example involving verisimilitude rather than probability is that of a court judge who, lacking sufficient evidence for deciding a case, gives his verdict by assigning more weight (verisimilitude) to the (still insufficient) evidence available either *pro* or *contra* the defendant. It is easy to see — Kant argues — that, no matter how well pondered the verdict is, it cannot avoid being subjective, since even when the judge feels sure that out of two opposite reasons one is weightier than the other, he must admit that he has been ultimately relying on his personal judgment which, for instance, has granted more credibility to a witness rather than to another. [18]

This is why Kant contrasts the numbering of reasons which characterizes probability with the weighing of reasons which is the distinguishing mark of verisimilitude. [19] For it is only when the reasons considered are ''homogeneous'' (like the faces of a die) that one can number them and give an estimate of probability by comparison with the reasons sufficient for certainty. On the contrary, when the reasons considered are ''heterogeneous'', as it is the case with the reasons considered by the judge in the above given example, one has to weigh them. In cases like that the understanding (the faculty of rules) gives way to the capacity of judgment [*Urtheilskraft*], just as logical rules give way to mere examples or to practical guidelines about the credibility of witnesses etc., which are by no means objective criteria of truth or probability. [20]

The obvious conclusion is that, if dialectic is considered as dealing with such pratical guidelines and examples, not only has it nothing to do with probability proper but cannot be called a logic, i.e. a *scientia scientifica* containing the *necessary* rules of all formal truth. [21] Unless, of course, one is prepared to call it a logic of semblance.

What is important to stress here is that Kant's battle against dialectic meant as a *logica probabilium* coincides with his battle against the confusion of logic with dialectic meant as an *ars disputatoria*. The heteroge-

neous reasons the *logica probabilium* is supposed to work with are fundamentally *discursive* ones: dialectic is not a true *logica probabilium* for the very reason that it has become an art of disputation. And this should not be surprising: dialectical techniques after all were developed by advocates who, disguising their ability to deal with words as a stringent logic, wanted to influence the judges in court so as to make them decide that — failing the possibility to ascertaint truth — the reasons in favour of their clients were weightier and more 'probable' than those against them.

One could ask now why Kant was so insistent in denouncing the illegitimacy of a *logica probabilium* grounded on ordinary language. The answer is that he believed such a logic to be (at least partly) responsible for serious problems affecting philosophy. For in his opinion every (good) philosopher is a judge who — like the ancient sceptics — considers philosophical problems from opposite sides, investigating the reasons supporting and opposing their possible solutions. [22] However, since the reasons *pro* and *contra* examined in philosophy are in most cases — especially where metaphysics is concerned — heterogeneous and cannot be numbered but only weighed, it is illusory to hope of reaching — dialectically — truth or probability. [23] Just as no objectivity and certainty (even of a probable kind) is possible when two opponents in a philosophical dispute refute each other through apagogical proofs. [24] It is not difficult to see, therefore, that the very existence of dialectic, with its appearance of thoroughness and its pretension of treating *logically* probable truth, [25] makes philosophers dangerously unaware of the limits of their subject.

On the other hand the fortune of dialectic among philosophers has a natural explanation: philosophy is discursive. As Kant says, "die Gründe der Wahrheit in philosophischen Erkenntnissen kann ich nur discursiv bestimmen" (*Wiener L.*, Ak. XXIV: 882). [26] It is because philosophy has to do with words (as stand-ins for abstract concepts) that philosophers have taken advantage of dialectical techniques. But, by so doing, they have also turned philosophy, metaphysics in particular, into "a battle ground quite peculiarly suited for those who desire to exercise themselves in mock combats" (B xv). And, still worse, they have raised widespread doubts on the relevance of philosophical issues themselves. [27]

Hence Kant's drastic remedy: for questions like the immortality of the soul (cf. *Wiener L.*, Ak. XXIV: 884), or in general for problems concerning the supersensible, "giebt es keine Warscheinlichkeit" (*R.* 2623, Ak. XVI: 441). [28] For in philosophy

Exempel könnet ihr wohl geben, um darin eure Urtheilskraft zu üben. Aber Regeln

werdet ihr nie angeben können, wie fern etwas wahrscheinlich sey, oder nicht. (*Wiener L.*, Ak. XXIV: 883). [29]

Such a position, as well as the association of dialectic with semblance and verisimilitude (which in German have significantly the same root: *Schein*, *Scheinbarkeit*) is even more noteworthy if one considers that for Kant it is the result of many years of philosophical reflection. In fact until 1762-64 — as shown by the notes taken by Herder (1744-1803) at his lectures on logic — Kant spoke of probability in connection with dialectic: "Wahrscheinlichkeit dialectica ist schwerer, weil Wahrscheinlichkeit" (*L. Herder*, XXIV: 5). [30]

Moreover, as we can see from *L. Blomberg*, until 1772 Kant did not contrast probability [*Wahrscheinlichkeit*] with verisimilitude [*Scheinbarkeit*]:

Die Logik handelet entweder von denen Reguln der gewissen, oder der wahrscheinlichen Gelahrten Erkenntniss, leztere heisst Logica probabilium [...] Bernouilli hat eine geschrieben, selbige aber ist nichts anders, als eine Mathematic, die auf die Glücks-Fälle appliciert ist. er zeigt, wie man nach denen Reguln der Wahrscheinlichkeit z.E. 8 mal werfen könne. Die Logica Probabilium hat blos Beyspiele, und hat bey Sterbe-Cassen ihren Nutzen. Die aber, die wir hier nennen, soll sich auf das Erfahren aller Menschen erstrecken, und eine solche ist noch nicht vorhanden. (Ak. XXIV: 38). [31]

This means that at the beginning of the seventies Kant, who was evidently informed about important works on probability conceived of as a calculus of chances, [32] nonetheless believed with Leibniz (1646-1716) [33] that one could find a *logica probabilum* not reducible to a calculus nor to the estimate of mortality cases. In other words he still believed possible a *logica probabilium* of a kind that later on he denied having anything to do with either logic or probability. But, as we know, at that later stage he carefully distinguished verisimilitude from probability and used the term 'Wahrscheinlichkeit' only for the latter while connecting dialectic only with the former. [34] The characterization of logic (including probability) as a negative canon of truth, an analytic, a science *a priori* with respect to experience and language was definitively established.

I.4. *Logic and language: open problems and partial conclusions*

On the basis of the texts available we have now formed a first general picture of the relation between logic and language according to Kant. It can be summarized by the following two points.

(I) Logic is connected with language: logical rules are instantiated in language and are 'discovered' by reflecting on the grammatical regulari-

ty of language.

(II) The science of logic, however, does not depend on language. For logic is an *a priori* science in a twofold sense: like grammar it is *a priori* with respect to the 'content' of language and thought; unlike grammar it is *a priori* also with respect to the 'form' of historically given languages. Therefore logic must be distinguished from grammar and, above all, must not be confused with dialectic meant either as an art of disputation or as a logic of probable truth.

This picture, however, is somewhat incomplete. Specifically it neither mentions nor justifies the fact that the relation between logic and grammar is not limited to the moment of the discovery of logical regularity in a grammar-regulated language. On the contrary such a relation is presupposed by the *science* of logic which patently works on a grammatical structure of 'subjects', 'predicates' etc. Does this happen because the science of logic stands on grammatical foundations, so that after all there is more than a historical meaning in the assertion that "Die Grammatiker waren die erste Logiker"? Or is grammar, at least the universal grammar grammarians seek, founded on logic? Kant does not discuss such questions. It is left to us, therefore, to infer from the general trend of his thought that he would give an affirmative answer to the second question. And we find an indirect support of our inference in *R*. 1620: "Eine allgemeine Gedankenlehre [...] ist möglich, und aus ihr folgt auch eine allgemeine Sprachlehre. *Grammatica Universalis*" (Ak. XVI: 40). [35]

But if we assume that the science of logic can have a privileged relation with universal grammar because the latter follows [*folgt*] from it, do we have to consider universal grammar as necessary as logic? Is universal grammar a *scientia scientifica*, so that only the empirical grammars of specific languages are *scientiae empiricae*? And are the grammars of natural languages isomorphic inasmuch as they all are presumably related to universal grammar?

For all we know none of these questions, especially that about the difference between universal grammar and particular grammars, receives an answer by Kant. But while this silence could be merely accidental, there is at least one unanswered question that Kant *cannot* possibly have considered, since the very fact that it can be asked puts him in an awkward position. The question is: how is it possible that, if logic precedes universal grammar and, *a fortiori*, is independent of the grammars of natural languages, both Kant's universal grammar and logic so openly borrow from the grammar of one particular natural language, i.e. Latin? For, on the one hand, universal grammar seems to be instantiated according to Kant in Latin grammar: the latter, in fact, "schickt sich für allen Sprachen weil sie am besten ausgearbeitet ist" (*PE*, Ak. XXIX:

31), [36] so much so that "lehrt man nach der Haupteinrichtung der latei-
nischen Grammatik auch die französische, deutsche Sprache" (R. 1620,
Ak. XVI: 40). [37] On the other hand it is not difficult to see, for example,
how decisive is the subject-predicate structure of Latin propositions for
the presence of categorical judgments in the logical table of judgments
of the Critique, not to speak of the presence of the corresponding cat-
egory of inherence and subsistence in the table of categories (cf.
A70 = B95; A80 = B106).

Of course this embarassing preeminence of Latin is not peculiar to
Kant but can be found in most of traditional logic, including Leibniz
and the logic of Port-Royal. [38] We have mentioned it here not only to
point out some open problems and a weak spot in Kant's system, but
especially to indicate a first significant symptom of his conviction that
thought is by nature linguistic. In this perspective the emergence of un-
clear aspects in the relation between logic and universal grammar, be-
tween universal grammar and particular grammars, and even the preemi-
nent rôle of Latin are not too disturbing. For what Kant really means
when he claims the independence of logic from language is that one
must separate logic from lexicon, and this is something logic shares with
any grammar. [39] In other words if one grants that thought is naturally
linguistic, the respective positions of logic and grammar(s) become (un-
duly) secondary with respect to the form/matter distinction, according
to which both grammar and logic represent the form side of the bino-
mial language-thought and, as such, are jointly opposed to the matter
side represented by lexicon. This is the background theory which connects
statements such as "Wörter sind der Materie, Grammatik aber die Form
der Sprache" (Wiener L., Ak. XXIV: 790-91) [40] with the argument that
dialectic is a presumptive logic because it prefers the realm of words to
the proper formal apparatus of grammatical entities. Indeed from this
viewpoint the fact that dialectic trespasses into the forbidden (to logic)
ground of lexicon with the intent of providing a technique of persuasion
is just another proof of its non-scientific and non-logical nature: logical
proof, as any proof worth its name, is not meant to persuade but to
convince. [41] If Kant considers universal grammar a science (a posteriori
or a priori), and consequently separates it from the arts of the traditio-
nal trivium, [42] it is because the remaining two arts [43] — dialectic and
rhetoric — aim at persuasion through an artful use of lexicon.

All this characterizes the main features of Kant's logic described in
Part I more precisely than a generic claim of its independence of lan-
guage: a) its analyticity, formality and scientificity (extended to the the-
ory of probability); b) its restricted scope — mostly due to the elimin-
ation from the Elementarlehre of the doctrines traditionally belonging to

dialectic[44] — that, together with the diminutive space assigned to syllogistic, makes it look so (apparently) poor.

As we shall see in Part II, this extrusion of lexicon from logic is counterbalanced by the conspicuous weight it acquires in Kant's philosophy. For, on the one hand, his efforts in establishing a theory of knowledge and truth are partially but obviously directed to the setting of adequate criteria of reference. On the other hand the very fact that he moves in this direction proves that for him philosophy can get over its difficulties not by ceasing to be discursive — which is impossible[45] — but by providing itself with the means for deciding the reference of words. The first subject to benefit from this philosophical approach is, according to Kant, dialectic (and also topic),[46] which will no longer be a major cause of the sceptical malaise of metaphysics, but will find at last its rightful and good use as a critique of semblance and a "cathartic of the understanding" inasmuch as it will contain "the characteristics and rules by which we can tell that something does not agree with the formal criteria of truth, although it seems so" (*L.*, Ak. IX: 17; *HS*: 19).

A philosophical program of this kind could not be carried out by any one but a transcendental philosopher.

II

LANGUAGE AND THOUGHT

II.1. *Language and thought: a datum*

In Part I I have pointed out that for Kant there exists a link between language and thought. We shall see now that this link is very strong, stronger anyhow than can be inferred from the evidence we have given sofar. Let us examine, for instance, a passage from the *Vorlesungen über philosophische Enzyklopädie* where, referring once again to logic and grammar, Kant says:

> Da die Form der Sprache und die Form des Denkens einander parallel und ähnlich ist, *weil wir doch in Worten denken*, und unsere Gedanken andern durch die Sprache mittheilen, so giebt es auch eine Grammatic des Denkens (Ak. XXIX: 31, italics mine).[47]

Even more significant are some well known statements from the *Anthropologie in pragmatischer Hinsicht*:

Language signifies thought and, on the other hand [*umgekehrt*] the means *par excellence* of intellectual signification [*Gedankenbezeichnung*] is language, the most important way we have of understanding ourselves and others. — Thinking is *talking* with ourselves [...] so it is also *listening* to ourselves inwardly (by reproductive imagination) (§ 39, Ak. VII: 192).

Statements like these are to be found also in less known texts such as the following handwritten note: "Wir bedürfen Worte, um nicht allein andern, sondern uns selbst verstandlich zu werden. Dieses Vermögen des Wortgebrauchs ist die Sprache (*R.* 3444, Ak. XVI: 839).[48] But what makes all this evidence unquestionably clear is Kant's criticism of Georg F. Meier (1718-77) who, in the textbook Kant adopted for his lectures on logic, had followed the rationalist, and in particular Wolffian, tradition according to which one should distinguish between 'judgment' [*Urtheil*] and 'proposition' [*Satz*] because 'judgment' is the mental act of judging and 'proposition' is its verbal expression (*judicium verbis prolatum*).[49] Kant does not hesitate to call this distinction "false" on the ground that without words "one could not judge anyway" (*L.*, Ak. IX: 109; *HS*: 116).[50] Indeed I believe that this criticism is perfectly congruent with a former one Kant had formulated against Meier. The latter had maintained that animals can have a distinct concept of a thing since they have a clear representation of it. Kant objected that a distinct concept is ultimately possible only if one can know it in a judgment; but animals do not judge, therefore they do not have distinct concepts.[51] We can add now that, since without words there is no judgment, animals cannot judge because they cannot speak.

There can be no doubt, therefore, that Kant does not consider language as a mere instrument for communicating thoughts. If "thinking is the same as judging" (*Prol.*, § 22, Ak. IV: 304), and in order to judge we need words, then words are necessary for any thinking activity, even for solitary thought ("thinking is talking with ourselves"). This seems so true to him that he does not believe that a man born deaf (who consequently can neither hear others nor his own internal speech) "in talking [...] does anything more than carry on a play of these [i.e. *körperlichen*] feelings, without really having and thinking concepts" (*PA*, § 39, Ak. VII: 192). The mutual connection of thought and (in the light of the case of the born deaf, *spoken*)[52] language is for Kant an ultimate and indisputable datum.

II.2. *Language and thought: a problem*

For Kant, however, this connection is not only a datum but also a

problem. A problem — it should be noted — that for him is not repre-
sented so much by the question 'How does this connection work?', but
by the question 'How can we be sure that it works properly?'. This is
not surprising if we consider Kant's attitude towards lexicon: words are
an indispensable means for thought, therefore the connection between
language and thought must work somehow. The problem is that words
can be a source of misunderstandings among people and — given the
verbal nature also of solitary thought — even a source of inconsistent
thinking. For that matter, if words were *per se* univocal how could dia-
lectic teach us to use words so as to make others think what we want?

Kant was neither alone nor the first to see a problem in the linguistic
nature of thought. On the contrary a discussion on these matters had
been flourishing in modern times at least since Locke (1632-1704). More-
over, in Germany — one year before the publication of Leibniz' answer
to Locke, but having Locke explicitly in mind — Lambert (1728-71) had
entered the debate by publishing the *Neues Organon*, a work which
clearly individuated a major source of semblance in the necessary link of
thought with words. For Lambert, on the one hand, defined semblance
as "something in between" [a *Mittelding*] between true and false which

> macht, dass wir uns die Dinge sehr often unter einer andern Gestalt vorstellen und
> leicht das, was sie zu seyn s c h e i n e n, für das nehmen, was sie w i r k l i c h s i n d,
> oder hinwiederum dieses mit jenem verwechseln. [53]

On the other hand he observed that

> Da wir von abwesenden oder auch an sich unempfindbaren *Dingen*, uns nur der
> Wörter oder *Zeichen klar*, des dadurch vorgestellten Begriffes oder *Sache* nur dün-
> kel bewusst sind; so kann es gar wohl geschehen, dass wir in der That nichts als
> Wörter denken, und uns einbilden, dass ein realer, wahrer, richtiger Begriff dabey
> Grunde liege. [54]

Kant must have had in mind these or similar Lambertian considera-
tions when he spoke of semblance as a possible consequence and a
symptom of the intrinsic connection of language and thought.

Nevertheless he did not follow Lambert in the latter's proposed ther-
apy for avoiding semblance; for instance he saw no point in an investi-
gation of sensible semblance (optical semblance in particular (A295 =
B352)). Whatever his debt to Lambert, Kant wanted a new remedy against
the semblance-producing effects of language, and to this end he dealt
with the problem posed by the connection between language and thought
by considering it in its 'classical' Lockean formulation. [55] According to
the *Essay concerning Human Understanding* words are "imperfect" be-
cause *a*) men are inconstant in the use of "the same sign for the same
Idea" (Locke 1700: III, ix, § 2), and *b*) a certain word fails to "excite in

the Hearer the same *Idea* which it stands for in the mind of the Speaker" (*ibid.*, § 3). To such imperfections Locke connected also the possibility of an "abuse" of words arising, for instance, from the use of words "without clear and distinct *Ideas*" (*ibid.*, x, § 2) or from "*taking them for Things*" (*ibid.*, § 14). All these defects, it should be noted, were not imputed by him to a supposed "incapacity" present in "one Sound, more than in another, to signify any *Idea*", but were attributed to the ideas words stand for (*ibid.*, ix, § 3).

Kant too believed that 1) words stand for concepts (rather than for things) and 2) problems like those singled out by Locke are not caused by a lack of rules connecting words and concepts.

A passage from the *Prolegomena* is absolutely clear on point 1). In order to illustrate his transcendental idealism Kant says that he admits the existence of bodies outside us, i.e. things which are absolutely unknown to us as they might be in themselves, but which we know through the representations that their influence on our sensibility gives us. Now to these representations [*Vorstellungen*] we give the denomination [*Benennung*] of bodies, which "*word* therefore merely *means* [*bedeutet*] the appearance of that for us unknown but none the less real object". This point of view is significantly backed by Kant by means of an explicit reference to Locke. In fact he maintains to have simply extended to primary qualities of bodies the theory according to which, independently of the real existence of external things, many of their predicates (secondary qualities) do not belong to such things in themselves but only to their *Erscheinungen* and have no existence "outside our representations". And this is something "that was generally accepted and admitted long before Locke's time, but more so afterwards" (*Prol.* § 13, Note II, Ak. IV: 289, italics mine).

As to point 2) Kant has never considered the possibility of giving rules for associating words with concepts. In his opinion "the sign (character) accompanies the concept only as its guardian (*custos*), so that it can reproduce the concept when the occasion arises" (*PA*, § 38, Ak. VII: 191). Words in fact are *Charakterismen* arbitrarily associated with concepts. They are

> devoid of any intrinsic connexion with the intuition of the Object. Their sole function is to afford a means of reinvoking the concepts according to the imagination's law of association — a purely subjective rôle (*KU*, § 59, Ak. V: 352).

For instance, as he points out in his *Vorlesungen über Metaphysik*, the word 'table' is not a symbol, but only a means for bringing about the intellectual representation of a table by way of association (*VM*: 154). Hence his firm opposition to the habit of disregarding the associ-

ation of a certain word with a certain concept once it has been established. For he believes that

> es giebt eigentlich in keiner Sprache Synonymen. Denn als man die Worte erfand, wollte man gewiss mit jedem einen besondern Begriff bezeichnen, den man auch bei genauerer Untersuchung des Wortes gewiss allzeit auffinden wird. Z.B. Ross ⟨Reiter⟩, Pferd ⟨Genus⟩, Gaul, Mähre ⟨Arbeit⟩, Kobbel, davon kömmt caballus), jedes führt einen besondern Begriff mit sich (*L. Dohna-W.*, Ak. XXIV: 783). [56]

Therefore one should not use words *synonymisch* just for the sake of style, and when it is impossible to put a check on lexical variations, one should prefer a "dead and learned language", at least for philosophical terminology. [57]

But the imperfection and abuse of words cannot be counteracted by strenghtening the arbitrary link between word and concept through avoidance of synonyms. If words stand for conceptual representations, any imperfection and abuse of words is nothing but an imperfection and abuse of concepts. And the latter is caused, in general, by the difficulty of assessing the objective reference of concepts, a difficulty enhanced by Kant's own fundamental philosophical assumptions. For, if we can know only things as they appear to us, how can we be certain that our concepts do not depend on a particular, randomly changing state of our own subject? And if we lack this certainty how can we ask for a consistent and intersubjectively accepted use of the words associated with our concepts?

Seen in this perspective the problems posed by the linguistic nature of thought can be solved only by a theory both consistent with transcendental idealism and capable of securing the conditions for the possibility of an objective reference — what Kant calls an objective meaning [58] — of concepts. This solution requires a kind of enquiry which does not necessarily involve a close study of language as such. Thus Kant does not pay any real attention to the question of the origin of language, [59] shows an interest in etymology only on account of a personal — apparently not very competent [60] — curiosity; dismisses Lambert's attempts in linguistic matters as mere lexicography and search for synonyms (cfr. *L. Busolt*, Ak. XXIV: 685). Moreover, whenever language comes to the foreground of his reflection — as it occasionally does — it is intended in a limited acceptation. Kant's attention goes in fact to *nouns* rather than to words in general: the so-called syncategorematic terms seem to be left to the care of the grammarian and/or the logician. But this should not be surprising, given that the words Kant is interested in and worried about are those parts of discourse (nouns, verbs) that correspond to *concepts*. [61]

On the other hand, the fact that Kant considers the problems caused by our use of words as concerning primarily the reference of concepts does not contrast with his conviction that words are necessary to thought. On the contrary *he often uses 'word' and 'concept' as interchangeable terms*: on the one hand a *concept* would be "without *sense* [*Sinn*], that is, without meaning [*Bedeutung*]" if an object corresponding to it is not presented in intuition (A240 = B299); on the other hand, "we can understand only that which brings with it, in intuition, something corresponding to our *words*" (A277 = B333, italics mine). Therefore Kant's solution of the problem of objective reference can be seen as an answer to the 'Lockean' questions posed by the imperfection and abuse of words, provided that 'word' is replaced by the binomial 'word/concept'. And since the abuse of words derives from their imperfection, Kant deals with primarily the problems posed by the latter. In particular he deals with the following problems:

A) How can a word/concept have an objective reference, in the sense that it is not merely linked to a particular state of our own subject, and consequently retain for us its reference (if any) through time?

B) How can it have an objective reference, in the sense that it is accepted by a plurality of subjects?

II.3. *The two questions of reference*

Question A) relative to the constancy of reference through time comes up — with a significant stress on 'name' rather than on 'concept' — in the first edition of the *Critique* (1781):

> if a certain name [associated with a certain concept] were sometimes given to this, sometimes to that object [representation], or were one and the same thing named sometimes in one way, sometimes in another (A101),

then our capacity to have words/concepts would be utterly useless. But how can we guarantee a constant and consistent use of our words/concepts?

The Transcendental Deduction of the 1781 edition of the *Critique* deals with this problem in a way involving imagination and the unity of apperception. [62] Imagination, "one of the fundamental faculties of the human soul" (A124), presides over our apprehension of the manifold of intuition and over the reproduction (reinstatement) of a preceding perception so as to form whole series of perceptions. But apprehension and reproduction are not enough: we also need to associate our representations according to a rule so that they are not reproduced "just as they

come together" (A121). Such an association would however remain entirely undetermined and accidental if, as Kant maintains, "I could not ascribe all perceptions to one consciousness (original apperception)" (A122). Therefore:

> the objective ground of all association of appearance [...] is nowhere to be found save in the principle of the unity of apperception, in respect to all knowledge which is to belong to me (A122).

It is in this "pure original *unchangeable* consciousness" (A107, italics mine), ultimately in the constancy and unity of the knowing subject, that both the possibility of forming concepts from the manifold of intuition and the possibility of the constant use of words associated with such concepts are grounded.

In the Transcendental Deduction of 1787 Kant develops a parallel argument in which the unity of consciousness plays its essential rôle in unifying representations in a *judgment*. Judgments, Kant argues, are the instrument of objective knowledge since in judgments the copula "is employed to distinguish the objective unity of given representations from the subjective" (B142). Thus, for instance, in the judgment 'The body is heavy' the representations 'body' and 'weight' "are connected in the object" and "are not merely conjoined in the perception" as when one says 'If I support a body, I feel an impression of weight' (*ibid.*). But — this is the point of the argument — the special character of judgments is due to the fact that in a judgment the representations are unified by relating them to "the unity of consciousness in the synthesis of them" (B137). Until we are not conscious of the fact that we have unified them we cannot really distinguish what pertains to the object from what is simply a subjective state.

As far as words are concerned the 1787 Deduction explains not only why the constancy of the reference of words/concepts is grounded on the constancy and unity of pure original consciousness, but also why only in judgments and through judgments this constancy is clearly attributed to the object of knowledge. When used in a judgment 'body' and 'weight' are words standing for conceptual representations which are supposed to be united (because we are conscious of our unifying them) in an object. Hence the possibility of using them constantly and consistently in judgments that we make at different times.

It is important to stress — though Kant himself does not do so — that the judgments mentioned in the 1787 Deduction are to be understood as *assertoric judgments* and are equivalent to *propositions* [*Sätze*]. The latter in fact, as we have seen in II.1, are not *judicia verbis prolata* (every judgment needs words), but are precisely those judgments in

which one makes a claim of objectivity.[63] According to Kant a generic *Urtheil* differs from a *Satz* in that

> ein Urtheil betrachtet das Verhältniss zweyer Begriffe, so fern es problematisch ist, hingegen durch Sätze verstehen wir ein assertorisches Urtheil. Im Urtheile probire ich meinen Satz: ich urtheile vorher, ehe ich behaupte. Beym Satz aber setze ich, und asserire ich etwas, und eben in der assertion besteht der Satz (*Wiener L.*, Ak. XXIV: 934).[64]

Consequently assertoric judgments or *Sätze* are *the* judgments that, by referring intentionally to an object, can be given a truth value: in assertoric judgments "muss ich die Wahrheit der Begriffe ausmachen" (*L. Pölitz*, Ak. XXIV: 581)[65] since "Irrthum und Warheit ist nur in Urtheile (und zwar wenn sie als Sätze gedacht werden)" (*R.* 2142, Ak. XVI: 250).[66]

Now the judgments mentioned by the 1787 Deduction (i.e. *Sätze* or assertoric judgments) coincide also with what the *Prolegomena* call "judgments of experience", which in fact are said to differ from "judgments of perception" in that they claim to have objective validity:

> All our judgments are at first mere judgments of perception, they are valid only for us, i.e. for our subject, and only afterwards we give them a new reference, namely to an object, and want the judgment to be valid for us at all times and equally for everybody (*Prol.*, § 18, Ak. IV: 298).

But by coinciding with judgments of experience the judgments of the 1787 Deduction are to be considered as assertions whose claim of objectivity explicitly implies their constant validity in time ("für uns jederzeit [...] gültig") and *also* their intersubjectivity ("für jedermann gültig"). Does this mean that, because of the connection between the objective validity of judgments and the objective reference of words/concepts, the arguments of the Deductions[67] answer *also* question B) concerning the intersubjective acceptance of the reference of words/concepts?

The answer is only partially Yes. For if — thanks to the arguments of the Deductions — we assign our judgments a relation to the object, then we are entitled to *want* [*wollen*] that everybody have access to what these judgments assert and understand the words/concepts used in them. And this surely not because it is possible to know what goes on in the mind of other people. Where words are concerned "one man connects [*verbindet*] the representation of a certain word with a certain thing, another man with another thing" (B140). What Kant means when he mentions the intersubjective validity of judgments of experience is that everybody can have access to the truth of an assertion, and can consequently understand the reference of the words/concepts used in it, whatever the psychological mechanism governing the linguistic competence of

each individual speaker. In this sense the reference of words/concepts can be said to be known when they are used in true judgments of experience. And were anyone to object that in order to assess the truth of a judgment one must already know what the words/concepts it contains refer to, Kant could reply — I believe — that one must have learned what such words/concepts refer to through previous judgments of experience. [68]

We must admit, however, that the arguments of both Deductions do not provide a completely satisfactory answer to question B). For, while both Deductions show why judgments of experience *purport* to convey knowledge whose truth or falsity does not depend on the subject who makes the judgment (cf. McCann 1985: 76), they do not provide a full theory of truth capable of explaining how to assess whether the *Satz* 'The body is heavy' asserted as true by a certain subject *is* actually true. The possibility of such an assessment is absolutely essential for intersubjectivity: according to the *Prolegomena* "if a judgment agrees with an object, all judgments about the same object must agree with one another" (§ 18, Ak. IV: 298). But when does a judgment agree with an object? When it is true. And when is it true? This question requires a more articulated answer than that offered by the Deductions, unless one did not care for a justification of intersubjectivity and were happy to consider a universe with a single knowing subject. But even in that case one could not guarantee that such a subject (unless infallible) would not be taking a *somnium objective sumptum* as if it were reality. [69]

II.4. *Truth*

So what is truth for Kant? It is well known that he was dissatisfied with the definition of truth as "the agreement of knowledge with its object" (A58 = B82). Not that he rejected it: he simply found it a merely "nominal definition" telling us only what a dictionary would say about the term 'truth' and therefore appropriate to (and insufficient for) different philosophical backgrounds. Such a definition, in fact, is neutral with respect to what it is meant by both 'knowledge' and 'object'. [70] Where the assessment of truth is concerned, however, relying only on a nominal definition of truth can be dangerous. For given that

der Gegenstand ist nicht bey uns, sondern nur die Erkenntniss desselben [...] können wir unsere Erkenntniss davon nicht mit dem Gegenstand, sondern nur mit unserer Erkenntniss vergleichen. Da also keine andere Erkenntniss wahr ist, als die mit dem Object übereinstimmt: so ist keine Erkenntniss vom Object wahr, als die mit unserer Erkenntniss vom Object übereinstimmt [...] Also die Erkenntniss ist

wahr wenn sie mit sich selbst übereinstimmt. Aber auf die Art können alle Lügen
wahr seyn, wenn es keiner ander Bestätigung, als der Übereinstimmung der Er-
kenntnisse mit sich selbst bedarf. (*Wiener L.*, Ak. XXIV: 822-23). [71]

It seems clear that the definition of truth as *adaequatio* is particularly
defective where Kant's foundation of the objectivity claim of judgments
is at issue. For, given that a judgment is objective inasmuch as the
representations it unifies are related to the necessary unity of appercep-
tion — so that the object of our judgment is acknowledged as an object
because it is recognized as something *known* by us, i.e. as an *Erkennt-
niss* — a definition of truth as *adaequatio* would not permit us, let alone
others, to *decide* the truth of our judgment. In other words the defects
of the definition of truth as *adaequatio* are similar to the reasons that
make the arguments of both Transcendental Deductions insufficient with
respect to truth.

However the definition of truth as *adaequatio* (and the arguments of
the Deductions) becomes acceptable as soon as it is backed by a suitable
foundation of the *objective* agreement of knowledge and its object. Such
a foundation requires a notion of truth "which precedes all empirical
truth and makes it possible" (A146 = B185) and is called *transcendental
truth*.

It is interesting to note that the need for transcendental truth is not
peculiar to Kant's philosophy. The Wolffian school had given great im-
portance to the rôle of the age-old notion of transcendental truth. Wolff
(1679-1754) had argued that:

si nulla datur in rebus veritas transcendentalis, nec datur veritas logica propositio-
num universalium, nec singularium datur nisi in instanti. [72]

Evidently Wolff too assigned to transcendental truth the task of ena-
bling us to establish truths valid beyond the here and now agreement of
intellectus et rei. But naturally Wolff was thinking of transcendental
truth in metaphysical terms:

veritas [...] quae transcendentalis appellatur & rebus ipsis inesse intelligitur, est or-
do in varietate eorum quae simul sunt ac se invicem consequuntur, aut, si mavis,
ordo eorum quae enti conveniunt. [73]

It is precisely because Kant agrees with Wolff on the necessity of
transcendental truth that his difference from Wolff in interpreting it is
all the more impressive and 'revolutionary'. Kant rejects the theory that
transcendental truth is inherent in an *ordo rerum*, just as he does not
want to ground it on some 'empirical reality': had he not started his
philosophical enterprise by denouncing both the defects of metaphysics
and the inevitable risk of scepticism connected with empiricism?

Thus Kant draws all the consequences from his Copernican revolution in maintaining that, although transcendental truth is *a priori*, it is founded on our capacity and our right to determine with necessity (and not by convention) the field of possible experience and to require that only what falls within this field be an 'object' for us. So that only our knowledge of this kind of objects has "objective reality" (A155 = B195) and our judgments about them can be "necessarily valid for everyone" (A821 = B849). Judgments of experience are of the latter kind, not simply because they are assertions founded on the unity and unchangeability of pure original apperception, but also because they are assertions ranging over a strictly determined (and determined *a priori*) field.[74]

II.5. *Transcendental truth and schematism*

It is only in the Analytic of Principles, and in particular in the chapter of the *Critique* on schematism, that Kant gives full foundation to transcendental truth.[75] There he argues that it is possible to fix rigidly and *a priori* the conditions (transcendental schemata) of application of our pure conceptual apparatus, i.e. the categories, to sensible intuitions, or conversely the conditions for subsuming sensible intuitions under the categories. Indeed the point of the argument is that it *must* be possible to *fix*[76] such conditions because, on the one hand, they are needed for mediating something as heterogeneous as categories and sensible intuitions, and on the other hand they are not 'given'. This is why transcendental schemata are *produced* by imagining (through productive imagination) how time is to be determined in order that a sensible representation be brought under each and all categories (and categories be applicable to sensible representations).

It is easy to see how much the production of transcendental schemata owes to the peculiar nature of time which is "the formal condition of the manifold of inner sense, and therefore of the connection of all representations" (A138 = B177). Thus a transcendental determination of time constitutes a representation homogeneous both to the category "which constitutes its unity, in that it is universal and rests upon an *a priori* rule", and to appearances [*Erscheinungen*] "in that time is contained in every empirical representation of the manifold" (A139 = B178). Above all such a determination of time has an *a priori* (necessary) character: transcendental schemata are in fact produced "independently of experience, though not independently of all relation to the form of experience in general" (A221 = B269).

Now the possibility of producing *a priori* transcendental schemata

means that we can *anticipate* the conditions under which only we can have objective knowledge. [77] We are able to determine *a priori* the conditions and the boundaries of possible experience in its relation to our knowledge. But clearly we thus give a 'Copernican' foundation to transcendental truth. For, given that "all our knowledge falls within the bounds of possible experience" and we set the conditions of possible experience, we set also the conditions of transcendental truth, i.e. of the "universal relation [of our knowledge] to possible experience [...] which precedes all empirical truth and makes it possible" (A146 = B185).

No wonder, then, that in rejecting as preposterous Eberhard's (1739-1809) accusation that "one seeks in vain for Kant's principle of synthetic judgments", Kant points out that this principle "is unequivocally presented in the whole *Critique,* from the chapter on the schematism on, though not in a specific formula" (Letter to Reinhold (1758-1823), May 12, 1789, Ak. XI: 39; Zweig: 141). [78] In fact the theory of schematism finally explains how the truth of judgments of experience (synthetic judgments) can be assessed: a judgment of experience is true if our knowledge agrees with the object, provided however that the conditions that precede and make possible empirical truth are respected. Such conditions, which are universally valid *a priori* and impose precise restrictions on what can be an object for us, remove the doubt that the objectivity of judgments of experience may be confined to the will (even in good faith) of whoever asserts them.

Indeed on the basis of the transcendental schematism of categories Kant is able to formulate a systematic list of synthetic *a priori* judgments — the principles of pure understanding — which "lie *a priori* at the foundation of all the other modes of knowledge" (A136 = B175). For these principles are to be considered as "the source of all truth [...] in as much as they contain [...] the ground of the possibility of experience viewed as the sum of all knowledge wherein objects can be given to us" (A237 = B296). The estrangement from traditional German rationalism is here achieved: in 1747 Crusius (1715-75) — a philosopher well known to Kant and acknowledged as very influential on him in his early pre-critical period — still maintained that "die Quelle aller Wahrheit und Gewissheit in einem nothwendingen, nemlich in dem göttlichen Verstande, liegen muss". [79]

II.6. *Empirical vs. transcendental schematism*

Now, given that the problem of truth and the problem of the objective reference of words/concepts have been unified by Kant in his treat-

ment of judgments (of experience), transcendental schematism not only provides new foundations to transcendental truth but completes also Kant's answer to the question concerning the possibility of a constant and intersubjective reference of words/concepts. Furthermore, transcendental schematism shows how categories themselves, i.e. pure concepts of the understanding, "obtain relation to objects and so possess *significance* [*Bedeutung*]" (A146 = B185). [80]

The chapter on schematism, however, introduces also a schematism for empirical concepts. Why is such schematism needed? A first answer could be that it is devised to show how specific empirical concepts secure specific objective reference. But is not this task rather beyond the scope of Kant's enquiry? Is not his attention devoted to the *conditions* for the possibility of an objective reference of words/concepts? One should remember that he goes as far as saying that in order to indicate the "reality" (objective reference) of empirical concepts one need do no more than indicate their examples. [81]

In order to answer these questions we should consider, first of all, that the primary function of the schematism of empirical concepts (as well as the function of the schematism of pure sensible concepts) is to provide an easily graspable term of comparison for transcendental schematism. [82] Thus Kant explains that the empirical or "sensible" concept of 'dog'

> signifies a rule according to which my imagination can delineate the figure [*Gestalt*] of a four-footed animal in a general manner, without limitation to any single determinate figure, such as experience, or any possible image [*Bild*] that I can represent *in concreto* actually presents (A141 = B180).

The delineation of the figure of a four-footed animal in general is the schema (a "representation of a universal procedure of imagination") of the concept of a 'dog', a schema that, although different from any single determinate figure of dog, has the function of "providing an image" for this concept (A140 = B179-80). An empirical schema is then what, with an openly psychological language, Kant elsewhere calls a *Normalidee* which "must draw from experience the constituents which it requires for the form of an animal of a particular kind" and is "an individual intuition (of the imagination)" which represents "the norm by which we judge of a thing [*Ding*] as a member of a particular animal species" (*KU*, § 17, Ak. V: 233). Imagination in fact

> in a manner quite incomprehensible to us, is able on occasion, even after a long lapse of time, not alone to recall the signs for concepts [words] but also to reproduce the image and shape [the schema, the *Normalidee*] of an object out of a countless number of others of a different, or even of the very same kind (*KU*, § 17, Ak. V: 234).

Therefore imagination *a*) associates an empirical concept with a word which has nothing to do with its intuitive content; *b*) provides a figurative paradigm [83] for the concept and its verbal expression so that our capacity of judgment can have a guide for deciding whether determinate empirical figures or images *in concreto* (to which the figurative paradigm bears a resemblance) [84] can be brought under the concept and the concept can be applied to them; *c*) supplies us with a procedure for finding something in intuition corresponding to the word/concept which shows the reality of the concept and makes us understand the word.

Also in the case of "pure sensible concepts", such as the geometrical concept 'triangle', we need a "rule of synthesis of imagination" — a schema — through which "images first become possible" (A142 = B181). The schema of 'triangle' differs however from the schemata of empirical concepts by being the *construction* of the concept of a triangle. As such it does not take its elements from experience but is a kind of *Normalidee* which represents every *possible* empirical image of a triangle, whereas the schemata of sensible concepts (and, accordingly, the corresponding images) can vary as a result of variations of our experience. This implies that the schemata of geometrical concepts not only give us something corresponding to them in intuition, but actually provide the 'mathematical objects' these concepts refer to. It is for this reason that only mathematical concepts can be strictly defined. [85]

Despite these differences, the non-transcendental schemata of pure sensible concepts and of empirical concepts share the capacity of relating such concepts to singular empirical images, a capacity deriving from their possession of a figurative quality. It is because of this quality that non-transcendental schemata are no sooner introduced as perspicuous instances of what (any) schema is than Kant invites his readers to appreciate also how different they are from the schemata of categories. The latter in fact are neither *Bilder* nor *Gestalten* and can never be brought into singular images. With the categorial concept of cause, he argues,

> I really go beyond the empirical concept of an event (something happening), yet I do not pass to the intuition which exhibits the concept of cause *in concreto*, but to the time-condition in general, which in experience may be found in accordance with this concept (A722 = B750 footnote).

If we could bring the category of cause into singular images this would mean that our imagination could produce a *Normalidee* of cause either by extracting it from experience — as it happens with empirical concepts — or by constructing it — as it happens with pure sensible concepts. But categories are *a priori* given concepts whose reference to objects is conditioned and mediated by an *a priori* determination of time

which fixes their relation to the form of any *possible* experience, but bears no resemblance to specific causes (images) of actual experience. [86]

All this explains what I mean when I say that the function of non-transcendental schemata within the chapter on schematism is a comparative one (by way of analogy and constrast with transcendental schemata).

If now we examine empirical schematism (leaving aside the schematism of pure sensible concepts) on its own merits together with the relevant passages of the *Kritik der Urtheilskraft* we cannot fail to appreciate Kant's debt towards that "physiology of the human understanding" (A x)he apparently considers of no consequence for his philosophy. Empirical schemata, in fact, even if correctly understood as procedures, as guides for our capacity of judgment, rather than as a third thing 'existing' between concept and intuition (be this an instance or an image), [87] are meant to perform a mediating function. [88] And this function is parallel to the capacity of words of recalling *Normalideen* as a means for relating concepts (associated with the words) to intuitions. But if this, on the one hand, gives additional evidence of the fact that Kant does not assign such a mediating function directly to language, [89] on the other hand shows that the theory of empirical schematism belongs to the "heyday of ideas" (Hacking 1975 B: 15-23) characterising the philosophy of language elaborated by 'physiologists' of human understanding: Kant's use of the term (normal) *idea* in a context different from that of ideas of reason (to which the *Critique* imposed to restrict it) is only too revealing in this respect. [90] And if we keep in mind the analogies, rather than the differences, between empirical and transcendental schematism we shall see how important the received views of those days about the psychology of language were for some decisive aspects of Kant's philosophical construction. [91]

Should we conclude that Kant was misleading himself and his readers in claiming psycho-physiological questions to be of secondary importance for his philosophy? Despite the objective influence of these questions on his *arguments* I believe that his claim is justified from the point of view of his *intentions*. And this not only and not so much because he must have considered his own psycho-physiological information as common knowledge (to the point of using empirical schemata as the most easily graspable terms of comparison for transcendental schemata); nor because he saw any psycho-physiological description (including the one he silently adopted) of the way we connect an empirical word/concept to the images *in concreto* as inevitably obscure; [92] nor, finally, because the language of empirical schematism acquires a different meaning once he transposes it on a transcendental level (imagination becomes productive, schemata are no longer figurative). The secondary importance of psy-

chology depends on the fact that no description of the psychological
mechanism linking empirical words/concepts to empirical images could
ever justify to Kant's eyes the constancy and intersubjectivity of such a
link. And *this* was his problem, as I have argued in this paper and as he
clearly declares, e.g., in the following *Reflexion*:

> Ich beschäftige mich nicht mit der Evolution der Begriffe wie Tetens (alle Handlun-
> gen, dadurch Begriffe erzeugt werden), nicht mit der analysis wie Lambert, sondern
> blos mit der objectiven Gültigkeit derselben. Ich stehe in keiner Mitbewerbung mit
> diesen Männern (*R.* 4900, Ak. XVIII: 23). [93]

Now, we have seen that concepts can be considered as really having
'objective validity' when they are employed in true judgments of expe-
rience. But judgments of experience can be assessed as true only within
the framework of transcendental truth and such a framework is supplied
by transcendental, not empirical schematism. For, on the one hand, I
could not assess the truth of my judgments if I did not have a transcen-
dental truth guaranteeing that the agreement of my judgment with what
I suppose to be its object is not based only on some subjective state of
mine. On the other hand, I cannot expect that my judgment on, say,
dogs is accepted as true (and the words/concepts it contains are univo-
cally understood) because everybody has had the same experiences of
dogs I have had. Admittedly, I can expect [and here the influence of
psychology on Kant is unquestionable] [94] that everybody has the capacity
of connecting an appropriate image with the word/concept 'dog', though
I have no means of knowing (nor am I interested in knowing) which
image. [95] What I must expect — better: what I must be certain of — is
that everybody, myself included, can ascertain whether the word/concept
'dog' used in my judgment refers to something falling within the field of
possible experience. In Note 3 to the 'Refutation of Idealism' of the
1787 *Critique* Kant argues in fact that:

> From the fact that existence of outer things is required for the possibility of a de-
> terminate consciousness of the self, it does not follow that every intuitive represen-
> tation of outer things involves the existence of these things, for *their representation
> can be very well be the product merely of the imagination (as in dreams and delu-
> sions)*. Such representation is merely the reproduction of previous outer percep-
> tions, which, as has been shown, are possible only through the reality of outer ob-
> jects. All that we have here sought to prove is that inner experience in general is
> possible only through outer experience in general. *Whether this or that supposed
> experience be not purely imaginary, must be ascertained from its special determina-
> tions, and through its congruence with the criteria of all real experience* (B278-79
> italics mine).

The mere psychological capacity of finding an image [something in
intuition] for a word/concept can never give assurance that the concept

associated with the word is not *fictitious*. If there were no rules or re-
strictions on what can be an object for us, i.e. on what can belong to
the field of possible experience, what could we object to someone main-
taining that his judgments about the ghosts he 'sees' are judgments of
experience and the words/concepts used in such judgments have objec-
tive validity only because he refers them to some corresponding im-
ages? [96] Therefore my demand that my judgments of experience (and the
words/concepts employed in them) be valid for me always and for
everybody else must be accompanied by certainty that such judgments
are congruent "with the criteria of all real experience". [97]

Only if these criteria are necessarily (i.e. non conventionally and *a
priori*) established can I admit that my judgments with all their assertive
force can be wrong. So that if I accept, in the light of such criteria, that
a particular assertion I have made about dogs is wrong I can either im-
prove my understanding of the word/concept 'dog' or acknowledge that
I have to change it altogether. In other terms the fixed and common
framework of truth determines a fixed and common semantical context
in which alone we may exercise our capacity of forming, using and
modifying empirical concepts. But then we may say that, although
Kant's background — as testified by empirical schematism *and* by the
theory of *Normalideen* — is typical of the heyday of ideas, his philo-
sophical results (with the privilege accorded to *Sätze*) do transform the
question of reference of words/concepts into a question of assertability
conditions of the *Sätze* words/concepts belong to. [98] And this explains
why, granted the relevance of empirical schematism as a model for the
transcendental one, it is the latter that makes the former possible and,
for this reason, is more important in Kant's philosophy. [99]

II.7. *Objectivity and intersubjectivity*

Having now definitively established that Kant's interest is focused on
the question of the objective validity of words/concepts and that a dis-
tinctive mark of this validity, as obtained in judgments of experience, is
the universal communicability of the knowledge they convey, could per-
haps intersubjectivity be the ultimate criterion of objectivity? [100]

Certainly Kant would not have truth and univocal reference in a pri-
vate dimension. I am allowed not only to formulate problematic judg-
ments (or judgments of perception) about word/concepts whose refer-
ence I am not certain of, but even to judge about words/concepts
having no corresponding objects in the field of possible experience.
What I am not allowed, according to Kant, is to claim that a judgment

of this kind is a judgment of experience by arguing — fallaciously — that such a judgment is objective 'for me' and that 'I know what I mean'.

However it is not the case that our knowledge is objective only because it is intersubjective. Rather, since "we must *synthesise* if we are to represent anything as *synthesised* (even space and time) [...] we are able to communicate with one another because of this synthesis" (Letter to J.S. Beck July 1 1794, Ak. XI: 514; Zweig: 216). And this in turn depends on the fact that

> we can only understand and communicate to others what we ourselves can *make*, granted that the manner in which we intuit something, in representing this or that, can be assumed to be the same for everybody (*ibid.*).

Intersubjectivity and communicability, therefore, are not the ultimate criterion of objectivity of knowledge, but are rather a consequence of Kant's arguments for objectivity of knowledge as they are developed jointly by the Deductions and the chapter on schematism. After all, as I have already noted, criteria of objectivity would be necessary also if there were a (fallible and not mentally deranged) single knowing subject who would undoubtedly want to distinguish knowledge from dreams, hallucinations etc. And the *veritas transcendentalis* Wolff was speaking of — and Kant wanted to provide with a non-metaphysical foundation — was meant also to separate the world of reality from the *mundus fabulosus*. [101]

But I would not go as far as saying with P. Guyer that Kant

> explains knowledge in such a way that even a solipsist could possess it, though his account does entail that if there are many subjects with similar sensibilities and understandings, they will share at least the same framework for knowledge (Guyer 1979: 157).

Kant in fact seems to adopt for these questions the same pattern of argumentation used for the "transcendental exposition" of space (A25 = B40). In the latter case: 1) he begins by acknowledging as a datum the existence of geometry; then 2) he points out that geometry "flows" from the concept of space; finally 3) he argues that only on account of his explanation of space geometry is possible.

Similarly Kant 1) assumes as a datum the intersubjectivity and communicability of knowledge. For he observes that

> ist der menschliche Verstand schon von Natur als theilnehmend zu betrachten. Er hat den Trieb seine Urtheile gegen die Urtheile anderer zu halten, und nicht allein by den obern Vernunftsätzen stehen zu bleiben (*L. Philippi*, Ak. XXIV: 390). [102]

And this tendency [*Trieb*] is so essential that "ein Mensch auf einer wü-

sten Insel giebt gewiss alle spekulation auf" (*ibid.*). [103]

Kant however 2) notices that communicability is not *per se* a guarantee of the objectivity of that which is communicated: sometimes "people who use the same language are poles apart in their concepts" (*PA*, § 39, Ak. VII: 193). Rather, communicability and intersubjectivity of knowledge must 'flow' from objectivity, but not necessarily *vice versa*. For, on the one hand, knowledge that is not communicable to others — or that, once it is communicated, finds absolutely no consent — is surely non-objective: a 'logical egoist' — who does not care to "test his judgment by the understanding of others" — rejects a *criterium veritatis externum* which cannot be dispensed with. [104] On the other hand the opinions of others are not, by themselves, a sufficient criterion of objectivity but have only "ein *votum consultativum*, nicht *decisivum*" (*R.* 2147, Ak. XVI: 252).

Finally 3) Kant argues that only his foundation of objectivity can account for communicability and intersubjectivity of knowledge. Therefore Guyer is right in maintaining that intersubjectivity and communicability are not for Kant the *explanans* of the objectivity of knowledge. In this sense there is no (transcedental) symmetry [105] between intersubjectivity-communicability and objectivity: the former are a necessary but insufficient condition for objectivity, the latter is a necessary and sufficient condition for the former. Nevertheless intersubjectivity and communicability are the *explanandum* of Kant's theory of objectivity of knowledge. If this were not the case *it would be impossible to justify his assertion that we think through words, or better through spoken words.*

Indeed, as I have tried to show in this paper, Kant's foundation of objectivity can be properly understood only in the light of the fact that he considers thought as linguistic by nature. True, besides this explicit assumption there is an implicit one, i.e. that there exist other minds. But it is not a merely accessory or dispensable assumption for, although words are needed also for solitary thought, they cannot be considered as if they were *not* a means of communication, as if language had not a social dimension. If these assumptions (explicit or implicit) are not discussed by Kant it is because what according to him requires discussion is only how language can be a means for attaining and sharing with others objective knowledge.

The result of his investigations leads him to impose a *restriction* on what can be considered objective knowledge, a restriction that he illustrates by way of an image. What he has found — he says — is an *island*, "the land of truth — enchanting name! — surrounded by a wide and stormy ocean, the native home of semblance" (A235 = B2945).

II.8. *Sailing the ocean*

The possession of this island does not mean that we do not risk, or
do not want, or can avoid sailing the ocean of semblance. Therefore
Kant has no sooner found this island than he has to deal with the fact
that we can think many more things than we can know (B146) and, con-
sequently, can use words — the instrument of all thought — standing
for thoughts which have no corresponding object in the land of truth.
*Semblance derives from the fact that we tend to use such words in asser-
toric judgments, even when it would be appropriate to judge problemati-
cally* (A255 = B350).

The problem posed by this state of affairs does not concern so much
the words associated with concepts that we have made up, such as the
concept of a flying horse (or of things 'seen' in dreams). In cases like
these we take, as it were, the materials of our concepts from other con-
cepts that have an objective reference in the field of possible experience.
Therefore we need only be careful — as Kant points out in B278-9
quoted above — in distinguishing the possibility of giving our fictitious
concepts an image from attributing to them an object. [106] The words/
concepts that worry Kant as possible sources of semblance are those de-
riving from our capacity of thinking what *per se* has no imaginative
counterpart.

This for Kant need not be a negative feature of our thought. On the
contrary, the finding of words for concepts lacking a direct imaginative
correspondent has meant a great improvement for mankind. For example
our having the word 'peace' is an obvious sign of progress if we com-
pare it to the American Indians' locution "we want to bury the tomo-
hawk" (*PA*, § 38, Ak. VII: 191). Such a symbolic way of speaking "mit
der Zeit muss [...] wegfallen" (*VM*: 154) [107] since it is due only to "pov-
erty in concepts and, consequently, in words to express them" (*PA*,
§ 38, Ak. VII: 191). This is so true that philosophy — an eminently dis-
cursive discipline, as we have observed in I.3 — really came into being
when the Greeks found suitable words for abstract concepts, thus leav-
ing behind previous speculations which had used the poetical but utterly
inadequate language of images:

> Die ersten Philosophen waren Poeten. Es gehörte nämlich Zeit dazu, für abstrakte
> Begriffe Worte auszufinden, daher man anfangs die übersinnlichen Gedanken unter
> sinnlichen Bildern vorstellt (*L. Dohna-W.*, Ak. XXIV: 699). [108]

And — it should be clear — the finding of suitable words meant the
very possibility of having abstract philosophical concepts: "kein Volk
auf der Welt hat eher angefangen zu philosophiren, als die Griechen, in-

dem kein Volk durch Begriffe, sondern alle durch Bilder dachten" (*Wiener L.*, Ak. XXIV: 800). [109] Here 'having concepts' is the same as 'having words for abstract concepts' in the preceding quotation, a further proof of the special link between word and concept stressed by Kant, in general, in his arguments against the existence of synonyms and, in particular, in his battle for the safeguard of philosophical terminology.

Not that it was easy to establish this terminology: Pherecydes (considered the first to have written in prose) and Heraclitus owed their notoriously obscure style to the fact that "die philosophische Sprache damals noch neu war" (*VM*: 10). And not all natural languages were equally well equipped for producing philosophical terms. Thus Latin was slow, whereas Greek was relatively quick in inventing such terms, a capacity inherited in modern times by German (not by French) to such a point that — Kant maintains — one could compile a dictionary of German terms for rational concepts thereby showing how appropriate they are. [110]

But now that we are used to a way of thinking/speaking full of abstractions, our condition has become more and more similar to that of an "adventurous seafarer" (A236 = B295) in the ocean of semblance. For the conquered freedom from the slavery of the figurative language of images has increased the possibility of a larger (intentional or unintentional) abuse of our words/concepts. In fact, on the one hand, abstract language facilitates the tricks of sophists (and the criticism of sceptics); on the other hand, it can make us abandon the land of truth for an (unexpected) voyage in the ocean of semblance, *inasmuch as we judge assertorically where only problematic judgments would be appropriate* (cf. A255 = B350).

The perils of navigation are still increased rather than lessened by our capacity to provide abstract words/concepts with images 'borrowed', by way of analogy, from other, more 'concrete', words/concepts. [111] In many cases the analogy is suggested by the etymology of the word associated with the abstract concept:

> in language we have many [...] indirect presentations modelled upon an analogy enabling the expression in question to contain, not the proper schema for the concept, but merely a symbol for reflection (*KU*, § 59, Ak. V: 352).

For instance, two abstract philosophical terms such as *Substanz* and *Grund*, thanks to their etymology, refer indirectly, symbolically, to the imaginative presentation of two analogous words/concepts, respectively, 'bearer' (of accidents) and 'base'. In other cases we resort to a more artificial analogy. Thus we represent a monarchy either as a body endowed with a soul, if the monarchy is governed by laws approved by the

people, or as a mere machine if it is governed by a dispotic will (*ibid.*).

Admittedly, this capacity of indirectly providing an imaginative correspondent for such words/concepts is very useful. But, as I said before, it might worsen the problem of their reference: using another concept as a symbol involves the risk of abusing the analogy between the symbolized and the symbol itself. The risk is twofold. On the one hand, we may unduly extend to all aspects of the words/concepts concerned the analogy that was established only with regard to one of their aspects. Thus when we think of God as the first Mover [*erste Beweger*] we may be wrongly led to make assertions about him — on the analogy of physical bodies subjected to the laws of movement — as if he were something extended, existing in time etc. (*KU*, Ak. V: 483). On the other hand, we may judge assertorically about an abstract word/concept simply because we can judge assertorically about the symbol supplied by its etymology. For instance, we use words to express the concept of 'nothing' in its various divisions. Thus our having the word 'noumenon' — standing for a 'nothing' which is an *ens rationis* — can induce us into making assertions about a *something*, i.e. an object that we 'think' (as the word's etymology suggests) rather than the negative concept of an object. A similar illusion can be produced by words associated with a *nihil negativum*, like 'two-sided rectilinear figure', or with a *nihil privativum*, like 'shadow', or lastly with *entia imaginaria*, like pure space and time (A290-92 = B347-49). Not to mention the problems caused by our capacity to use *termini inanes* such as 'quintessence' (*L. Philippi*, Ak. XXIV: 485), especially when they are employed within the context of some obscure philosophy.

Now also against the risk of that semblance which can be hidden in the use of indirect, analogical or symbolic exhibition of concepts Kant's requirements on anything that is to belong to the land of truth prove most effective. We have only to bear in mind such requirements in order to check whether an analogy has gone too far or we are exchanging words for things. Furthermore these requirements can also help us differentiate between such 'nothings' as the *entia imaginaria* space and time (which are nothing as objects but are nevertheless the forms of intuition) and concepts like quintessence, that owe their illusory reference only to their having a word associated with them.

Not all problems, however, are eliminated in this way. For there are concepts produced *a priori* by reason — the ideas of reason — which cannot be considered concepts of 'nothing' nor figments of the brain. They differ also from categories. The latter too are *a priori* concepts of the understanding needing the indirect exhibition provided by the word associated with them. It is indeed a category — substance — that we

have seen Kant choosing as a typical example of the indirect exhibitions characterizing language. But categories have transcendental schemata and, consequently, have an objective reference. [112]

True, some moral ideas like 'virtue' can be (though always inadequately) exemplified in experience (cf. A315 = B372; A569 = B597; *KU*, § 57, Ak. V: 343). But the three ideas of reason (soul, world, God) that are a "necessary product of reason" (A338 = B398) according to the "three functions of syllogisms" (*Prol.* § 43, Ak. IV: 330), can never be given a corresponding object in sense-experience (A327 = B383). No matter which symbolic exhibition we find for ideas of reason, no matter how effective the analogy by which we illustrate them is, we will not obtain a *kongruirendes Object* for them.

But since these concepts are not "superfluous and void" (A329 = B385) and, at the same time, we do not want to leave them to the old dialectical techniques that have brought traditional metaphysics to its sorry state, then we must find a relation between them and experience. Thus only we can open new perspectives to philosophy which, albeit always discursive, should not be condemned to be mere talk. Of course, it would be completely out of place to consider here Kant's argument to this effect as developed in the Transcendental Dialectic. It will suffice to mention a particular point of the argument concerning the regulative use of ideas which — as we shall see — is relevant to the subject of this paper. The point is contained in Kant's assertion that "the idea of reason is an analogon of a schema of sensibility" (A665 = B693).

Kant argues that just as understanding unifies the manifold of intuition through concepts, so reason unifies the manifold of concepts through ideas. In doing so reason provides understanding with guiding principles of systematic unity failing which experience as a connected whole would be ultimately impossible. For instance, the idea of a perfect necessary cause of the world does not — nor can — have an object in our experience. Nonetheless we can employ it as a regulative principle (A644 = B672) in order to search for the highest possible degree of unity in experience (A677 = B705). This is possible if we think the world as if it were produced by a supreme intelligence. In other words we relate the principles of systematic unity to our experience thanks to the idea of God considered as the (extramundane) cause of all connection in the world. But then this idea, inasmuch as it permits, conditions and mediates this relation, functions as an analogon of a schema. And, since it succeeds in relating a principle of reason to experience so that "the principle [...] is so far also objective, but in an indeterminate manner" (A680 = B708), the idea itself acquires a relation to experience, even though it does not acquire an object in it.

Therefore we shall never be able to make well founded assertions about the alleged objects of ideas, but we shall be making well founded assertions out of principles of reason urging us to find a maximum of unity in our experience. [113] Our voyage in the troubled waters of semblance need not finish in a wreck, despite the fact that our hope of finding new lands will never be fulfilled and the peril of a wreckage will always be real.

What is of interest for us in this argument is, as I said above, Kant's appeal to the doctrine of analogical schematism.

I have already pointed out how transcendental schematism is modelled on the schematism of empirical concepts. I want to stress now how also the analogical schematism of ideas is devised according to a model, i.e. the indirect, analogical, symbolic exhibition of abstract words/concepts. Once again, given the obvious dependance of both models on theories describing the (psychological) working of language, Kant's attention to such theories proves remarkably great. But if we consider that the analogon of a schema is an idea of reason, i.e. something that, on a par with transcendental schemata, lacks the figurative character typical of both empirical schemata and symbols, we must also appreciate Kant's independence of mind in modifying his adopted models.

II.9. *Conclusion*

This condition of debt towards and independence of other philosophical approaches to the problems posed by language characterizes Kant's position, as we have shown in Part II of this paper. For we have seen that:

I) Kant is absolutely convinced that between language and thought there exists a link which is so strong as to make him deny — contrary to a long-established tradition — the possibility of pre-linguistic judgments and as to make him use 'word' and 'concept' as interchangeable terms.

II) Kant is equally convinced that the linguistic nature of thought is — as it had been pointed out by Lambert — a major source of semblance unless we find rules for deciding the objective reference of words/concepts.

III) In dealing with the problem of the objective reference of words/concepts Kant seems to adopt the classical formulation of the problem given by Locke. For he seems concerned primarily with the *constancy* and *intersubjectivity* that such an objective reference should have.

IV) Despite the fact that Kant looks at the problem from a traditional viewpoint, he gives it an original turn. In fact he does not try — as

many had done before — to provide a 'physiological' or psychological analysis of the understanding aimed at showing how a single word/concept can obtain an objective reference. Kant's attention is directed at the fact that words/concepts are supposed to be used constantly and intersubjectively in assertoric judgments (i.e. propositions [*Sätze*] or judgments of experience). Consequently the problem of reference need not be treated in a referentialist perspective, but can be solved by investigating the assertability conditions of assertoric judgments. And such assertability conditions are shown by Kant to be grounded — in line with his Copernican revolution — on the unity and unchangeability of the knowing subject.

V) Now, just because the claim of constancy and intersubjectivity of assertoric judgments depends on the unity and unchangeability of the knowing subject, it would remain a mere *claim* — at least with respect to intersubjectivity — if there were no way of assessing the truth of assertoric judgments (where 'truth' cannot be only agreement, i.e. *adaequatio*, of knowledge with its object). Consequently Kant works out a theory (transcendental schematism) which gives new life and a new meaning to the traditional, in particular Wolffian, doctrine of *veritas transcendentalis*. Kant's transcendental truth is no longer a truth inherent in a metaphysical order of things, but consists in the set of schematized categories from which it is possible to infer a number of synthetic *a priori* principles fixing what can be an object for us. Therefore if in an empirical judgment knowledge agrees with the object *and* the object fulfills the requirements of transcendental truth, then the judgment is true and whoever asserts it has every right to claim that it must be valid constantly and for everybody. This means also that the words/concepts used in such a judgment can be constantly *and* intersubjectively accepted: communicability of knowledge (which follows immediately from the assumption of the linguistic nature of thought) is accounted for. Moreover, through the doctrine of analogical schematism, Kant finds also a positive function — which is neither dogmatic nor liable to the criticism of the sceptics — for the words/concepts of metaphysics.

VI) Admittedly, the presence of a theory of schematism for empirical (and pure sensible) concepts in the *Critique of pure reason* and of a theory of normal ideas in the *Critique of Judgment* shows that Kant's debt towards traditional doctrines of reference goes for beyond his tacit acceptance of the classical, Lockean, formulation of the problem. For the above mentioned Kantian theories are obviously influenced by that 'physiology' of the understanding used in attempted referentialist solutions of the problem of reference during the so-called 'heyday of ideas'. Such influence is all the more noteworthy if one considers that 1)

schematism of empirical concepts is used by Kant as a term of comparison for transcendental schematism; 2) Kant appeals to the notions of 'symbol' and 'analogy' — commonly used in philosophical analyses of language of his times — in order to introduce his concept of 'analogon of a schema' essential for relating ideas of reason to experience.

VII) However transcendental schemata (and analoga of schemata) are not figurative and — above all — have a completely new character and a new function with respect to schemata of empirical concepts. Being *a priori*, they are necessary and immutable; being determinations of time, they determine the form of all possible experience and, therefore, provide a 'revolutionary' foundation of transcendental truth and an assertabilist solution to the problem of reference.

We said at the end of Part I that for Kant the extrusion of lexical considerations from logic does not mean a lack of interest in language, so much so that a great deal of his philosophical efforts can be read as an attempt to reconcile the natural discursiveness of our thought with the legitimate demand that our knowledge be objective. In Part II we have seen that the philosophy of language resulting from this attempt — although not completely explicit (possibly even to Kant's own mind) and still rooted in the 'heyday of ideas' — is not only original but opens new perspectives in the history of the subject.

NOTES

1) Cf. *L.*, Ak. IX: 11; *HS*: 13: "Everything in nature, in the inanimate as well as the animate world, happens *according to rules* [...] The exercise of our own powers also takes place according to certain rules which we first follow without being conscious of them [...] Thus, for example, general grammar is the form of a language as such". Cf. also *L. Blomberg*, Ak. XXIV: 20; *L. Philippi*, Ak. XXIV: 311; *L. Pölitz*, Ak. XXIV: 502; *L. Busolt*, Ak. XXIV: 608; *L. Dohna-W.*, Ak. XXIV: 693; *Wiener L.*, Ak. XXIV: 790; *R.* 1562, Ak. XVI: 3.

2) ["[...] you have spoken for many years but you have not reflected over language [...] Nevertheless, in learning a dead language, you have found that it is governed by certain constant rules, failing which you cannot have language, i.e. communication of your thoughts. (Therefore you have followed the rules of a language, without being able to name these very rules. (Molière — bourgeois gentleman — to speak prose — therefore to speak grammatically)). But language is communication of thoughts. Therefore in all men thought too will be governed by certain rules. (That he cannot even name, although he has followed them for a long time)"]. For the reference to Molière's *Bourgeois gentilhomme* cf. E. Adickes's comment in Ak. XVI: 39n.

3) Cf., for instance, *L. Blomberg*, Ak. XXIV: 180: "Die Todten Sprachen haben den Vorzug, dass sie ewig schön, und selbständig bleiben" ["Dead languages have the advantage of remaining for ever beautiful and independent"]; *L. Dohna-W.*, Ak. XXIV: 639: "[...] bei toten Sprachen [...] man die Regeln eigentlich bezeichnen kann" ["[...] in dead languages [...] one can designate the rules properly"].

4) ["Grammarians were the first logicians"].

5) ["through mere grammar one can learn no language"].

6) ["does not contain words, not *copia vocabularum* [sic], but only the form of language"].

7) ["grammar [...] is only a discipline, logic is a science; doctrine. The difference between discipline and science is this: in the former one cannot know why something is so and not otherwise, but in the latter one has an internal proof of it. In the former we consult experience, in the latter only the understanding, the former is particular, the latter universal, the former is called *scientia empirica*, the latter *scientia scientifica*"]. In other texts, where Kant does not differentiate between logic as a *scientia scientifica* and grammar as a *scientia empirica*, he maintains that logic is a science while grammar is not, cf. *L. Dohna-W.*, Ak. XXIV: 694: "Die Logik muss Prinzipien a priori enthalten [Daher ist Logik eine Wissenschaft und Grammatic nicht. Weil ihre Regeln züfallig sind]" ["Logic must contain principles a priori [Therefore logic is a science and grammar is not, because its rules are contingent]"]. Cf. also *L. Blomberg*, Ak. XXIV: 25.

8) Synthetic knowledge includes mathematics, inasmuch as it involves the forms of sensibility, i.e. *a priori* intuitions.

9) This positive sense of dialectic is found by Kant in Zeno of Elea, cf. A502 = B530.

10) On this phase of the history of dialectic cf. Kneale & Kneale 1962: 13-14; Kennedy 1963: 3-25.

11) ["to argue for the sake of truth; to debate to get the upper hand, i.e. the victory in the controversy"].

12) ["an *art of persuading* and dialectical, therefore detrimental. Moreover rhetoric has always procured corruption to religion, to philosophy both in the state and in the sciences: Demosthenes, Carneades, Cicero"]. Kant's distaste for eloquence is testified by his biographer Borowski 1804: 167. But cf. also *L.*, Ak. IX: 17; *HS*: 19 and *KU*, § 53, Ak. V: 327.

13) Cf. *L. Philippi*, Ak. XXIV: 337: Petrus Ramus with his work removed "[...] jene [aristotelische] blinde und knechtische Tyrannei und wekte die Gemüther aus ihrer Schlafsucht auf" ["[...] that blind and slavish [aristotelian] tyranny and awakened minds from their slumber"]. Further reference to Ramus is, for example, in *R.* 1635, Ak. XVI: 58.

14) Cf. Knutzen 1747: 46. It should be noticed, however, that Wundt 1945: 67 stresses how Johann Franz Budde (1667-1729) in Budde 1703 — a very influential work in German philosophical historiography (cf. Micheli 1980: 45) — divided Renaissance philosophers in two classes: those who criticized old philosophy but did not build a new one, and those who either put new elements in the body of old philosophy or founded an original one. As examples of the former Budde, significantly, mentioned Vives and Valla; as examples of the latter Lull (1235-1315) and Ramus.

15) On Aristotle's concept of dialectic as the field of opinion cf. Prantl 1927: III, 99 ff. For a comment on classical texts (especially those of Boethius (480(?)-526)) linking 'probable', as the Latin equivalent of ἔνδοξον, to the field of oratorial and dialectical controversies cf. Maierù 1972: 397 ff. On the interpretation of dialectic as a *logica probabilium* in XVIII Century Germany cf. Tonelli 1962: 135-139. Kant's battle against the mingling of probability with the art of disputation is directed in general to 'all logics' (*L. Pölitz*, Ak. XXIV: 554). But obviously his polemical targets are authors nearer to him in time, and especially the author of the textbook of logic he was lecturing on. In fact Meier

1752, Ak. XVI: 72 (§ 6), divided logic in "Vernunftlehre der ganz gewissen gelehrten Er-kenntniss (analytica), und [...] Vernunftlehre der wahrscheinlichen gelehrten Erkenntniss (dialectica, logica probabilium)" ["logic of completely certain learned knowledge (analytica) and [...] logic of probable learned knowledge (dialectica, logica probabilium)"]. An explicit criticism of this Meierian position is in *L. Pölitz*, Ak. XXIV: 507. Critical comments are directed by Kant also to Crusius 1747, whose treatment of probability he considers "in der That nichts anders als was man schon durch die blos gemeine Erkenntniss weiss, nur dass es mit einem gewissen Pomp, der dem Crusius immer sehr eigen ist, vorgetragen wird" ["actually nothing else than what one already knows through mere common knowledge, only that it is expounded with a certain pomp, which is always very typical of Crusius"]. Crusius' non-mathematical logic of probability is indebted to a tradition going back to Andreas Rüdiger (1673-1731), cf. Schepers 1959: 46-47 n.

16) ["a fraction whose denominator is the number of possible cases and whose numerator is the number of favorable cases. For instance, should one throw 8 with two dice: he has 6 favorable cases and 36 possible cases. The fraction is then 6/36, of which the opponent [in the game] has 30 possible cases and he has 6"].

17) ["the object is probable, but our knowledge [...] is true"]. Cf. also *R*. 2608, Ak. XVI: 438: "Das Wahrscheinliche Urtheil ist ungewiss; das Urtheil über Wahrscheinlichkeit muss gewiss seyn" ["the probable judgment is uncertain, the judgment on probability must be certain"]; *L. Pölitz*, Ak. XXIV: 554. Lambert 1764: I, 115 (Phän. § 187) may have been a source of inspiration for Kant, inasmuch as he maintained that the calculus of chances, though used also for determining degrees of probability, does not indicate merely probable propositions, but true, certain and determined propositions. However Lambert developed a probabilistic syllogistic which takes into account arguments such as those considered by Kant typical of verisimilitude.

18) The example of the court judge, which is to be found in *Wiener L.*, Ak. XXIV: 880, shows the persistent connection of discussions on probability with the question of *probatio*, a term originally pertinent to juridical controversies, cf. Maierù 1972: 398.

19) Cf. for instance *Wiener L.*, Ak. XXIV: 880; *L. Pölitz*, Ak. XXIV: 555.

20) Cf. *L. Busolt*, Ak. XXIV: 645: "Ehrlichkeit und Aufrichtigkeit der Zeugen scheint zwar ein objectives Kriterium des Wahrheit zu seyn, aber ist es nicht [...] geben sie uns gar keine Regeln, nach denen wir das Wahrscheinliche beurtheilen können ["Honesty and sincerity of witnesses certainly appears to be an objective criterion of truth, but it is not [...] we are given no rules at all according to which we can judge the probable"].

21) No matter how useful it is to clarify concepts such as 'probability', 'doubt', 'historical credibility' etc., this clarification is not a real *logica probabilium* giving rules for judging degrees of probability. For "general logic can supply no rules for judgment" (A135 = B174) and "judgment is a peculiar talent which can be practical only and cannot be taught" (A133 = B172).

22) In a letter to J.H. Lambert of December 31 1765 (Ak. X: 55; Zweig: 48) Kant mentions the "many capsizings" of all the subjects he had been treating as a method for checking the correctness of his philosophical reflections about such subjects. For the similarity of this method to that of ancient sceptics cf. Tonelli 1967.

23) Cf. *Wiener L.*, Ak. XXIV: 880: "Die Gründe in der philosophie sind [...] immer der qualitaet nach unterschieden, und können nicht numerirt sondern ponderirt werden. Die Grösse der Wahrscheinlichkeit kann oft in der philosophie nicht so bestimmt werden, weil die Gründe nicht gleichartig sind" ["In philosophy the reasons differ always according to quality and cannot be numbered but weighed. Often in philosophy the measure of probability cannot be so determined because the reasons are not homogeneous"].

24) Cf. A789-792 = B817-820. Apagogical proofs are always admissible only in mathematics, cf. Capozzi 1980: 97-98.

25) In philosophy one can obtain a kind of 'probable' knowledge which, although *practically* sufficient, will always be *logically* insufficient, cf. *L. Pölitz*, Ak. XXIV: 555. Logic in fact is not concerned with probable knowledge, but with true and certain knowledge *of* the probable.

26) ["I can determine the reasons of truth in philosophical knowledge only discursively"].

27) Philosophical disputes using apagogical proofs are easily shown to be grounded on subjective reasons. Therefore "the spectators, observing that each party is alternatively conqueror and conquered [are led] to have sceptical doubts in regard to the very object of the dispute" (A794 = B822).

28) ["there is no probability"]. Cf. also *L. Dohna-W.*, Ak. XXIV: 740.

29) ["you can certainly have examples for training in them your capacity of judgment. But you will never be able to give rules about the degree to which something is probable or not"].

30) ["Probability dialectica is more difficult because [of] probability"].

31) ["Logic deals with rules either of certain knowledge or of probable learned knowledge; the latter is called logica probabilium [...] Admittedly Bernouilli has written one [such logic], but his is nothing but mathematics, which is applied to chances. He shows how, e.g., one can throw 8 times according to the rules of probability. The logica probabilium has merely examples, and is useful in [calculating insurances in] death-cases. However the one that we mention here should include the experience of all men, and such a logic is not yet available"].

32) Not only does Kant refer to Jakob Bernoulli (1654-1705), but he certainly knew at least about the authors (Christian Huygens (1625-95), Nikolaus Bernoulli (1687-1759), Remond de Montmort (1678-1719), Abraham de Moivre (1667-1754)) mentioned by Wolff 1740: 443 (§ 595). On this early stage of the history of probability as a calculus, cf. Hacking 1975a.

33) Of course I am not here referring to Leibniz's studies on probability, which were presumably unknown to Kant, but to his desiderata, as expressed for instance in *Essais de Théodicée* (1710), § 28. It is anyhow to Leibniz's desiderata that Wolff 1740: 442 (§ 593) refers to.

34) Notice that Meier 1752, Ak. XVI: 427 (§ 171) used as Latin equivalent of 'wahrscheinliche Erkenntniss' *both* '*cognitio probabilis*' and '*cognitio verisimilis*'.

35) ["a universal theory of thought [logic] is possible [...] and from it follows also a universal theory of language. *Grammatica universalis*"].

36) ["is appropriate to all languages because it is better accomplished than any other one"].

37) ["one teaches also the French, German language following the general arrangement of Latin grammar"].

38) Cf. Couturat 1901: Chapter III, § 9 and Arens 1955: 73-74, respectively. On the problems posed in general by the assumption of Latin as the model-language insisted Peirce (1839-1914), cf. Ferriani: in this volume.

39) If we assume that for Kant all grammars of natural languages — being reducible to one (universal or Latin) grammar — are isomorphic, then *all* differences among natural languages amount, for him, to merely lexical ones, cf. Shamoon 1981: 49.

40) ["words are the matter, but grammar is the form of language"].

41) Cf. *L. Pölitz*, Ak. XXIV: 601; *KU*, § 90, Ak. V: 461. Cf. Perelman & Olbrechts-Tyteca 1958: 37-38.

42) Cf. *R.* 1647, Ak. XVI: 64: "Grammatic, Rhetoric, Dialectic (*Trivium*)".

43) They are arts both in the sense that an *ability* is not a *science*, and in the sense that a *technique* is not a *theory*, cf. *KU*, § 43, Ak. V: 303-4.

44) Logic proper is only an *Elementarlehre* (cf. Jäsche's *Preface* to *L.*, Ak. IX: 4; *HS*: 6) pertaining to the doctrines of concepts, judgments and syllogisms. Therefore Kant eliminates from it not only all themes relative to opinion (which he deals with in the introductions to his courses on logic), but also anything which would make it seem an *ars inveniendi*, by arguing that logic is unable to find new knowledge about content, logic being a science in which we abstract "von aller Materie, d.i. den objecten" ["from all matter, i.e. objects"] (*R.* 1628, Ak. XVI: 45).

45) This is why all attempts to extend the mathematical method to philosophy are bound to fail, cf. *Deutlichkeit*, Ak. II: 278-9; A713-738 = B741-766.

46) Cf. A269 = B325.

47) ["Since the form of language and the form of thought are parallel and resemble each other, because *we do think in words* and communicate our thoughts to others through language, so there is also a grammar of thought"]. Cf. Riedel 1982: 8.

48) ["We need words to make ourselves understood, n o t o n l y b y o t h e r s, but also by o u r s e l v e s. This capacity of using words is l a n g u a g e"].

49) Cf. Meier 1752, Ak. XVI: 828 (§ 462): "Ein Urtheil, welches durch Ausdrücke bezeichnet wird, heisst *ein Satz* (*propositio, enunciatio*)" ["a judgment which is designated by words is called a *proposition* (*propositio, enunciatio*)"]. But cf. also Wolff 1713: 157 (III, § 4) and Wolff 1740: 131 (§ 42): "judicium est actus mentis [...] propositiones [...] non sunt nisi combinationes terminorum". (On Wolff's concept of language as essentially a tool of communication cf. Arndt 1982: 95-96). Further examples of this distinction between judgment and proposition are in Lambert 1764: I, 77 (Dian. § 118) and Euler 1770-74: 101 (Letter 102). On these matters in general cf. Nuchelmans 1983.

50) Cf. also *L. Pölitz*, Ak. XXIV: 580: "Die Logiker definiren ein Saz per judicium verbis prolatum, welches aber falsch ist, wir würden gar nicht urtheilen, wenn wir keine Wörter hatten" ["Logicians define a proposition *per judicium verbis prolatum*, which, though, is false; we would not judge at all if we had no words"]; *Wiener L.*, Ak. XXIV: 934: "Wenn [...] die Logici sagen: ein Urtheil ist ein Satz in Worte eingekleidet: so heisst das nichts, und diese definition taugt gar nichts. Denn wie sie Urtheile denken können ohne Wörter?" ["When [...] logicians say: a judgment is a proposition clothed in words: this says nothing and this definition is completely useless. For how could you think judgments without words?"].

51) For this polemic cf. *Spitzfindigkeit*, Ak. II: 59 and K. Lasswitz's comment in Ak. II: 467.

52) Should a man born deaf be considered on a par with animals? There is some disturbing evidence that Kant would give an affirmative answer to this question. He maintains in fact that "a man who, because he was deaf from birth, must also remain dumb (without speech) can never achieve more than an *analogue* of reason" (*PA*, § 18, Ak. VII: 155). And this because *written* language — in non-ideographic systems, of course — is made of "letters which are signs for sounds" (*PA*, § 39, Ak. VII: 192), while it is (articulated) sounds that stand for concepts (*PA*, § 18, Ak. VII: 155). Written language can replace spoken language (though not completely) only if one has learned to write before becoming deaf, and especially if one is well to do (!) (*PA*, § 22, Ak. VII: 159-60). On these matters cf. Shamoon 1981: 244-47. Notice however that the sense of hearing was considered essential for language by many authors, notably by Johannes Nikolaus Tetens (1736-1807) in Tetens 1771: I, 771.

53) Lambert 1764: II, 217 (Phän. § 1) ["[...] makes that very often we represent things under another form and easily take what they s e e m to be for what they r e a l l y are or also, mistake the latter for the former"].

54) Lambert 1764: II, 14 (Sem. § 21) ["since as regards *things* which are absent or not perceivable in themselves we are conscious only of words or *signs*, and only *obscurely* con-

scious of the concept or *object* thus represented, it may very well happen that we actually think nothing but words and imagine that a real, true and exact concept underlies them''].

55) Kant used to recommend Locke's work, together with those of Hume (1711-76) and Rousseau (1712-78), as a "Grammatick für den Verstand" (*L. Blomberg*, Ak. XXIV: 300; *L. Philippi*, Ak. XXIV: 495). On Lockean aspects of precritical and critical Kantian philosophy (although not with reference to linguistic matters) cf. Brandt 1981. Brandt stresses also Locke's influence on German philosophical culture: Knutzen (Kant's first logic teacher) had translated some Lockean essays (Brandt: 39). One should remember also that King Friedrich II had asked Meier (the author of the *Auszug*) to give a course of lectures on Locke's philosophy, cf. Ueberweg 1924: III, 459.

56) ["really in no language there are synonyms. For when words were invented each of them was surely intended to designate a specific concept which an accurate investigation of a given word will always unfailingly allow us to retrace. E.g. steed ⟨rider⟩, horse ⟨genus⟩, jade, hack ⟨work⟩, (Kobbel whence comes caballus), each brings with itself a particular concept''].

57) For a discussion of the term 'idea' taken from a dead and learned language but often used synonymously, cf. A312-14 = B368-70. To his censure of the practice of disregarding the association between word and concept is connected, I believe, Kant's opposition to the method of *"ingeniöse Memoriren"*. This method, in fact, seems to him absurd since it is meant to stamp certain representations in one's memory by associating them to collateral representations having no affinity with them (as an example Kant mentions the artificial association of the image of a sow, 'suis', to 'suis', plural dative of the possessive pronoun 'suus', in order to remember part of the following title: *De heredibus suis et legitimis*). But this is only a way of burdening rather than of helping memory, cf. *PA*, § 34, Ak. VII: 183. The only true help for memory is the written word: to have a note book in one's pocket is much better than having the tricks of *ingeniöse Memoriren* in one's head, cf. *PA*, § 34, Ak. VII: 185.

58) I shall avoid speaking of 'meaning' because this would require an investigation exceeding the scope of this paper. In fact it would be necessary 1) to give an account of what for Kant is the 'logical meaning' of categories (A147 = B187); 2) to discuss the use of concepts in analytic judgments (while we shall concentrate on synthetic judgments); 3) to clarify the distinction between reference and the meaningfulness of concepts. I have touched on such questions in Capozzi 1981. A very interesting treatment of points 1) and 2) is in Nolan 1979, who also argues convincingly that Kant's use of the terms *Sinn* and *Bedeutung* is very different from (or even opposite to) that of Frege.

59) This contrasts with the marked interest for linguistic matters existing in the German cultural milieu and testified to by the choice of topics of the Berlin Academy for its Prize competitions of the years 1759, 1771, 1784 (the 1771 one in particular dealing with the origin of language), cf. Gessinger 1985: 217, 221.

60) Cf. Borowski 1804: 167, who mentions critical comments on Kant's etymological efforts (in *PA*, Ak. VII: 100) published by the "Allgemeine Jen. Lit. Zeitung" (1801, 51: 407).

61) Similar considerations have been made with respect to Locke, cf. Kretzmann 1968: 181-2.

62) Of course I have no pretension of giving here anything but a very sketchy outline of some of the arguments developed in the Transcendental Deductions of the first two editions of the *Critique*. I aim only at isolating those of their results that concern the subject of this paper.

63) Cf. *L. Dohna-W.*, Ak. XXIV: 781: "Satz — judicium verbis prolatum — nein — nur assertorische ⟨Urtheile sind⟩ Sätze" ["Proposition — judicium verbis prolatum — no — only assertoric ⟨judgments are⟩ propositions"]. Cf. also *L. Pölitz*, Ak. XXIV: 580.

64) ["a judgment considers the relation of two concepts in so far as it is problematic; by proposition(s), on the other hand, we mean an assertoric judgment. In a judgment I test my proposition: I judge before making an assertion. But in a proposition I posit and assert something, and the proposition consists exactly in the assertion"]. Cf. also *L.*, § 30.3, Ak. IX: 109; *HS*: 116; *Entdeckung*, Ak. VIII: 193-4 n.; Letter to K.L. Reinhold, May 19, 1789, Ak. XI: 45; Zweig: 148. Cf. Nuchelmans 1983: 254-256. Kant is not always faithful to his own distinction and sometimes uses *Urtheil* and *Satz* interchangeably, cf. for instance A73 = B98, A75 = B100, where he mentions a "problematic proposition". In that context, however, 'problematic proposition' clearly means a judgment having only logical possibility but lacking objective validity.

65) ["I must discover the truth of the concepts"].

66) ["Error and truth are only in judgments (and indeed when judgments are thought as propositions)"]. On the analogy between Kant's propositions and Aristotle's apophantic propositions, i.e. propositions which are either true or false, cf. Patzig 1973: 207, 219-20.

67) Or, at least, the argument of the 1787 Deduction with its stress on judgment.

68) That this is really Kant's opinion can be inferred from the fact that, while Meier 1752, Ak. XVI: 829 (§ 462) maintains: "Ein Satz wird verstanden, wenn alle in demselben befindliche Ausdrücke verstanden werden" ["A proposition will be understood if all the terms to be found in it are understood"], Kant comments — as early as 1755-56 — on the margin of his copy of Meier's book: "oder die durch die Ausdrücke bezeichneten Urtheile verstehen" ["or understand the judgments designated by the terms"] (*R.* 3426, Ak. XVI: 829).

69) According to Wolff 1736: 381 (§ 493) dream is assumed objectively when "somnianti res quaedam apparent, quae non sunt". 'To dream' in this sense means having no criterion for distinguishing (unless one were infallible) what is real from what is not. Consequently one should not mistake the 'somnium objective sumptum' for physiological dreams, as Kant argues against a reviewer of the *Critique* in an Appendix to *Prol.*, Ak. IV: 376 n.: "When I oppose the truth of experience to dreams, he [the reviewer] never thinks that it is only a question here of the well known *somnium objective sumtum* of the Wolffian philosophy, which is merely formal and is not concerned with the difference between sleeping and waking, which has no place in a transcendental philosophy".

70) In this respect Kant's position is somewhat similar to that of Tarski who not only considers his own correspondence theory of truth as "neutral" with regard to one's epistemological convictions, but sees in such a neutrality an asset of his theory, cf. Tarski 1944: 362.

71) ["the object is not with us, but only knowledge of it is [...] we cannot compare our knowledge of the object with the object, but only with our own knowledge. Thus, since no other knowledge is true except that which agrees with the object, no knowledge of the object is true apart from that which agrees with our knowledge of the object [...] Therefore knowledge is true when it agrees with itself. But then, if no other confirmation is needed apart from the agreement of knowledge with itself, all lies can be true"].

72) Wolff 1736: 385 (§ 499). On Wolff's concept of transcendental truth cf. Capozzi 1982: 123-32.

73) Wolff 1736: 383 (§ 495). Cf. also Baumgarten (1714-62) in Baumgarten 1757, Ak. XVII: 51 (§ 118).

74) Prauss 1969: 181 rightly observes that for Kant what contradicts the criteria of formal logic is always different from truth; what contradicts transcendental truth has no possibility of being either true or false (i.e. cannot be expressed in a judgment of experience). On Kant's concept of transcendental truth cf. also Hofmeister 1972 and Stuhlmann-Laeisz 1976: 32-33.

75) Although what follows is far from being a full reconstruction of Kant's theory of schematism, I hope that it will hint at an answer to those commentators who have wondered why, after the Transcendental Deduction, a theory of schematism is needed at all or, anyhow, what this theory is supposed to do. Short surveys of critical literature on schematism are in Detel 1978: 18-25 and Allison 1981: 59-65.

76) Cf. Cassirer 1911: II, 639, who insists that for Kant 'objective' means 'invariable' in our knowledge and 'invariable' is only what is established once and for all by the laws of knowledge and cannot be derived from objects.

77) Cf. A246 = B303: it is possible "to anticipate the form of possible experience in general".

78) Cf. the opening lines of the chapter immediately following that on schematism: "in the preceding chapter we have considered transcendental judgment with reference merely to the universal conditions under which it is alone justified in employing pure concepts of understanding for [zu] synthetic judgments" (A148 = B187).

79) Crusius 1747: 768 (§ 432). For Crusius' influence on Kant's early philosophy cf. Beck 1969: 393-94.

80) Without transcendental schemata categories are "empty concepts without objects" (B348).

81) Cf. KU, § 59, Ak. V: 351. Cf. also A84 = B116.

82) Cf. Chipman 1982: 106: "The notion of a schema is probably most easily grasped in connection with empirical concepts. The notion of transcendental schema [...] can then be understood derivatively".

83) A schema is a "monogram, a mere set of particular qualities, determined by no assignable rule and forming rather a blurred sketch drawn from diverse experiences than a determinate image [...] an incommunicable shadowy image" (A574 = B598).

84) Of course this is a partial resemblance since it refers to one — or anyhow few — marks characterizing the concept. This explains why a Normalidee "cannot [...] contain anything specifically characteristic, for otherwise it would not be the normal idea for the genus' (KU, § 17, Ak. V: 235). The parallel passage in the chapter on schematism is A141-B180.

85) Cf. Capozzi 1981, also for a discussion of differences between geometrical and other mathematical concepts. On the problems posed by Kant's notion of 'mathematical object' cf. Parsons 1984: 109-111.

86) Cf. Pippin 1976: 159 n: "schemata explain how categories can condition the possibility of there being any determinate, empirical meaning of, say, causality". There are, however, different opinions: see for instance Hogrebe 1974: III.1, note 23, who maintains that transcendental schemata, as procedures, are indeed the conditions for assigning an objective reference to categories but, as the results of the procedure of schematization, are themselves the reference of categories.

87) All instances are images in concreto, cf. Daval 1951: 103.

88) On this mediating function seen as Kant's answer to the old 'One-Many' problem cf. R.P. Wolff 1963: 123; Pippin 1976: 156-59 and Pippin 1979: 3.

89) In fact, a) given his equation 'word = concept' the mediation between concept and intuition could hardly be linguistic; b) given the lack of resemblance between words and the intuitive counterpart of the concepts they are associated with, they cannot perform the function Normalideen are supposed to perform. It is well known that J.G. Hamann (1730-88) first and then J.G. Herder criticized Kant on this point. See in particular Herder 1799: 241-2 who observes: "ging der Namengebend Verstand nach Einem Gesetz zu Werk: 'Bezeichne Vieles mit Einem, dem Merklichsten, das wiederkommend das Object dir nicht nur als dasselbe erscheine, sondern dir auch in Namen die Eigenschaft bemerkbar werde, die für dich gehöret" ["the name-giving understanding got to work following a single

law: 'Designate the many with one, what is most noticeable, so that not only in coming back the object can appear as the same to you, but in the name can also be perceivable the property that for you is the appropriate one"]. That language has the capacity of connecting the subjectivity of the knower to the objectivity of the world will be a main thesis of W. von Humboldt (1767-1835) at the beginning of the XIX Century, cf. Formigari 1977: 88 ff; Tagliagambe 1980: 163-69.

90) Hacking 1975b: 28, 39, notices Kant's veto on the abuse of the term 'idea' (A320 = B377; cf. our note 57), but he does not investigate whether Kant himself faithfully obeyed his own veto.

91) De Vleeschauwer 1934-1937: I, 299-329, gives at lenght evidence of the influence exerted on Kant by Tetens especially where psychological theories (involving in particular imagination) are concerned.

92) In referring to *both* schemata (A141 = B180-1) and *Normalideen* (*KU*, § 17, Ak. V: 233) Kant insists on how misterious is the way they are formed and used.

93) ["I do not occupy myself with the evolution of concepts like Tetens (all the operations through which concepts are produced), nor with their analysis like Lambert, but only with their objective validity. I am not in competition with these men"]. See also *R.* 4901, Ak. XVIII: 23 where Kant contrasts Tetens' 'subjective' viewpoint relative to the concepts of pure reason with his own 'objective' one.

94) Cf. Beck 1969: 424 who shows how Tetens had been working on this question.

95) As we have seen above, Kant maintains that "one man connects the representation of a certain word with a certain thing, another man with another thing" (B140).

96) Cf. Butts 1984: 164 ff.

97) Cf. also *KU*, § 40, Ak. V: 295-96.

98) It is interesting that Posy 1983 attributes to Kant an assertability theory of truth (but moving from the point of view of contemporary discussions on truth) although he does not consider Kant's reflections on language.

99) As Simon 1972: 525 observes, "categories represent nothing less than the power of the empirical concepts to mean *something at all*".

100) Cf. *KU*, § 9, Ak. V: 217; § 21, Ak. V: 238.

101) Cf. Baumgarten 1757, Ak. XVII: 46: "Confusio veritati transcendentali opposita esset somnium objective sumptum. Somniorum aggregatum esset mundus fabulosus".

102) ["human understanding, by its nature, is to be considered as partecipating. It has the tendency to compare its judgments with the judgments of others, without confining itself to higher rational principles only"].

103) ["A man on a desert island certainly gives up all speculation"].

104) Cf. *PA*, § 2, Ak. VII: 128. On logical egoism cf. A820-21 = B848-9 and *Wiener L.*, Ak. XXIV: 874. It is interesting to notice that a logical egoist is absorbed in a play of thoughts in which "he sees, conducts and judges himself not in a world in common with others, but (as in dreaming) in his own world" (*PA*, § 53, Ak. VII: 219).

105) Here I disagree with Hogrebe 1974: III.2, who maintains that they *are* symmetrical.

106) Kant is equally clear in explaining that we must not exclude from the field of possible experience words/concepts lacking a corresponding image *only* because of their being far from us in time and/or space; cf. A493 = B521.

107) ["with time must [...] cease"].

108) ["The first philosophers were poets. Time, that is, was needed in order to find words for abstract concepts; therefore initially one represented supersensible thoughts under sensible images"].

109) ["No people in the world began to philosophize before the Greeks, in that no people thought through concepts, but all thought through images"]. On the influence of

XVIII Century philosophical historiography on Kant's presentation of the Greeks as the first philosophers cf. Micheli 1980: 170 ff.

110) Praise for the German language is in *L. Philippi*, Ak. XXIV: 485. The wealth of German lexicon according to Kant is due to the work of missionaries who translated Latin and Greek words into German, cf. *M. Volckmann*, Ak. XXVIII: 369-70; *L. Busolt*, Ak. XXIV: 686, where to missionaries is attributed also the merit of having made no abuse of tropes, given that what they wanted was to *illuminate* and not to confuse people. Leibniz too praised German as a language particularly adequate to philosophy, although not because of its capacity to form abstract terms. Cf. Mugnai 1976: 103-106.

111) This capacity is connected with a peculiar aspect of our thought (never openly discussed by Kant), that is, the fact that our slowly conquered freedom from the language of images is more apparent than real: our understanding — being not intuitive but discursive — *needs* images (*KU*, § 77, Ak. V: 408). Therefore it has to borrow by way of an analogy the images that abstract words/concepts lack.

112) Thus, thanks to the indirect exhibition based on the analogy offered by the etymology of the word, we have a sort of understanding of the concept of substance. But this concept can be said to refer to the land of truth only when — as one of the twelve categories — it can be shown to have a transcendental schema.

113) Referring to Kant's distinction according to which one thing is "to spell out appearances according to a synthetic unity" and another thing is "to read them as experience" (A314 = B370-71) Riedel 1982 stresses the rôle of ideas of reason (and their analogical schematism) in providing a means not only for reading appearances as experience but also for interpreting experience.*

REFERENCES

Primary Sources

A, B	= as usual indicate, respectively, the 1781 and 1787 editions of the *Kritik der reinen Vernunft*.
Ak.	= followed by a roman numeral indicates the volume of *Immanuel Kant's Gesammelte Schriften*, ed. by the (Königliche) Preussische Akademie der Wissenschaften zu Berlin; from vol. XXIII ed. by the Deutsche Akademie der Wissenschaften zu Göttingen. Berlin: (Reimer); de Gruyter, 1902-.
Deutlichkeit	= *Untersuchung über die Deutlichkeit der Grundsätze der natürlichen Theologie und der Moral.* (1764).

Entdeckung	= *Über eine Entdeckung nach der alle neue Kritik der reinen Vernunft durch eine ältere entbehrlich gemacht werden soll.* (1790).
L.	= *Logik. Ein Handbuch zu Vorlesungen*, ed. by Gottlob Benjamin Jäsche. (1800).
L. Blomberg	= *Logik Blomberg.* (c. 1771).
L. Busolt	= *Logik Busolt.* (1790).
L. Dohna-W.	= *Logik Dohna-Wundlacken.* (1792).
L. Herder	= *Logik Herder.* (1762-63).
L. Philippi	= *Logik Philippi.* (1772).
L. Pölitz	= *Logik Pölitz.* (1789).
M. Volckmann	= *Metaphysik Volckmann.* (c. 1784-85).
KU	= *Kritik der Urtheilskraft.* (1790).
Prol.	= *Prolegomena zu einer jeden künftigen Metaphysik, die als Wissenschaft wird auftreten können.* (1783).
PA	= *Anthropologie in pragmatischer Hinsicht.* (1798).
PE	= *Vorlesungen über Philosophische Enzyklopädie.* (1775?).
R.	= *Reflexionen*, followed by the number of their progressive ordering in Kant's *Handschriftlicher Nachlass* (Ak. XVI-XVIII).
Wiener L.	= *Wiener Logik.* (1794-96).
VM	= *Vorlesungen über die Metaphysik*, ed. by K.H.L. Pölitz. Erfurt: in der Keyserschen Buchhandlung, 1821. (Repr. Darmstadt: Wissenschaftliche Buchgesellschaft, 1975.)

Standard translations of Kant's texts used in this essay:

Anthropology from a Pragmatic Point of View. Engl. transl. by Mary J. Gregor. Amsterdam: Nijhoff, 1974.

The Critique of Judgement. Engl. transl. by James Creed Meredith. Oxford: Clarendon Press, 1973.

Critique of Pure Reason. Engl. transl. by Norman Kemp Smith, London: Macmillan. 1976[13]. I have slightly modified this translation; in particular I have translated 'Schein' with 'semblance' rather than with 'illusion'.

Prolegomena to Any Future Metaphysics. Engl. transl. by Peter G. Lucas. Manchester Univ. Press. 1953.

When quoting from the above mentioned translations I give no page number since they all indicate through-

out the pagination number of the original texts. The following translations will be quoted using the following abbreviations:

HS   = *Logic. A Manual for Lectures*. Engl. transl. by Robert S. Hartman & Wolfgang Schwarz. Indianapolis: Bobbs-Merrill. 1974.

Zweig   = *Kant. Philosophical Correspondence 1759-1799*. Engl. transl. by Arnulf Zweig. Chicago: Univ. of Chicago Press, 1967.

Secondary Sources

Allison, Henry E. 1981. "Transcendental Schematism and the Problem of the Synthetic *A Priori*". *Dialectica* 35. 57-83.

Arens, Hans. 1955. *Sprachwissenschaft. Der Gang ihrer Entwicklung*. Freiburg/München: Alber.

Arndt, Hans-Werner. 1982. "Teoria del linguaggio e conoscenza nel razionalismo classico dell'Illuminismo tedesco". Buzzetti & Ferriani 1982. 77-101.

Baumgarten, Alexander Gottlieb. 1757[3]. *Metaphysica*. Halae Magdeburgicae: Hemmerde. (Repr. in Ak. XVII and XVIII.)

Beck, Lewis White. 1969. *Early German Philosophy: Kant and his predecessors*. Cambridge Mass.: Harvard Univ. Press.

Borowski, Ludwig Ernst. 1804. *Darstellung des Lebens und Charakters Immanuel Kant's*. Königsberg: Nicolovius (Repr. Bruxelles: Culture et Civilisation, 1968.)

Brandt, Reinhard. 1981. "Materialien zur Entstehung der *Kritik der reinen Vernunft* (John Locke und Johann Schultz)". *Beiträge zur Kritik der reinen Vernunft 1781/1981*, ed. by I. Heidemann & W. Ritzel, 37-58. Berlin & New York: de Gruyter.

Budde, Franz. 1703. *Elementa Philosophiae Instrumentalis*. Halae.

Butts, Robert E. 1984. *Kant and the Double Government Methodology*. Dordrecht: Reidel.

Buzzetti, Dino & Ferriani, Maurizio eds. 1982. *La grammatica del pensiero: Logica, linguaggio e conoscenza nell'età dell'Illuminismo*. Bologna: Il Mulino.

Capozzi, Mirella. 1980. "Osservazioni sulla riduzione delle figure sillogistiche in Kant". *Annali della Facoltà di Lettere e Filosofia dell'Università di Siena* 1. 78-98.

——. 1981. "Kant on Mathematical Definition". *Italian Studies in the Philosophy of Science* ed. by Maria Luisa Dalla Chiara, 423-52. Dor-

drecht/Boston/London: Reidel.

——. 1982. "Sillogismi e proposizioni singolari: due aspetti della critica di Wolff a Leibniz". Buzzetti & Ferriani 1982. 103-50.

Cassirer, Ernst. 1911[2]. *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neuern Zeit*, vol. II. Berlin: B. Cassirer.

Chipman, Lauchlan. 1982. "Kant's Categories and their Schematism". *Kant on Pure Reason* ed. by Ralph C. S. Walker, 100-16. Oxford: Oxford Univ. Press (originally: 1972. *Kant-Studien* 63. 39-49).

Couturat, Louis. 1901. *La logique de Leibniz d'après des documents inédits*. Paris: Alcan (Repr. Hildesheim: Olms, 1961.)

Crusius, Christian August. 1747. *Weg zur Gewissheit und Zuverlässigkeit der menschlichen Erkenntniss*. Leipzig: Gleditsch (Repr. *Die philosophischen Hauptwerke*, ed by G. Tonelli, vol. III. Hildesheim: Olms, 1965.)

Daval, Roger. 1951. *La métaphysique de Kant: Perspectives sur la métaphysique de Kant d'après la théorie du schématisme*. Paris: Presses Universitaires de France.

Detel, Wolfgang. 1978. "Zur Funktion des Schematismuskapitels in Kants Kritik der reinen Vernunft". *Kant-Studien* 69. 17-45.

De Vleeschauwer, Herman-J. 1934-1937. *La déduction transcendentale dans l'oeuvre de Kant*. Antwerp: De Sikkel.

Euler, Leonhard. 1770-74[2]. *Lettres à une Princesse d'Allemagne sur divers sujets de Physique et de Philosophie*. Mietau & Leipzig: Steidel.

Formigari, Lia. 1977. *La logica del pensiero vivente*. Roma-Bari: Laterza.

Gessinger, Joachim. 1985. "Language and the Foundation of Society in Germany". *Topoi* 4. 215-22.

Guyer, Paul. 1979. *Kant and the Claims of Taste*. Cambridge Mass.: Harvard Univ. Press.

Hacking, Ian. 1975a. *The Emergenge of Probability*. Cambridge: Cambridge Univ. Press.

——. 1975b. *Why does Language Matter to Philosophy?*. Cambridge: Cambridge Univ. Press.

Herder, Johann Gottfried. 1799. *Verstand und Erfahrung. Vernunft und Sprache. Eine Metakritik zur Kritik der reinen Vernunft*. 2 vols. Leipzig. (Repr. Bruxelles: Culture et Civilisation, 1969.)

Hofmeister, Heimo E.M. 1972. "The Problem of Truth in the 'Critique of Pure Reason'". *Proceedings of the Third International Kant-Congress* ed. by Lewis White Beck, 316-321. Dordrecht: Reidel.

Hogrebe, Wolfram. 1974. *Kant und das Problem einer transzendentalen Semantik*. Freiburg/München: Alber.

Kennedy, George. 1963. *The Art of Persuasion in Greece*. Princeton:

Princeton Univ. Press.

Kneale, William & Kneale Martha. 1962. *The Development of Logic*. Oxford: Clarendon Press.

Knutzen, Martin. 1747. *Elementa philosophiae rationalis seu Logicae cum generalis tum specialioris mathematica methodo in usum auditorum suorum demonstratae*. Regiomonti & Lipsiae: Hartung.

Kretzmann, Norman. 1968. "The Main Thesis of Locke's Semantic Theory". *The Philosophical Review* 77. 175-96.

Lambert, Johann Heinrich. 1764. *Neues Organon*. Leipzig: Vendler (Repr. in *Philosophische Schriften* vol. I and II, ed. by Hans-Werner Arndt. Hildesheim: Olms, 1965.)

Locke, John. 1700⁴. *An Essay Concerning Human Understanding*. London: Churcil. (1984 ed. by Peter H. Nidditch. Oxford: Clarendon Press.)

Maierù, Alfonso. 1972. *Terminologia logica della tarda scolastica*. Roma: Edizioni dell'Ateneo.

McCann, Edwin. 1985. "Skepticism and Kant's B Deduction". *History of Philosophy Quarterly* 2. 71-89.

Meier, Georg Friedrich. 1752. *Auszug aus der Vernunftlehre*. Halle: Gebauer. (Repr. in Ak. XVI.)

Micheli, Giuseppe. 1980. *Kant storico della filosofia*. Padova: Antenore.

Mugnai, Massimo. 1976. *Astrazione e realtà: Saggio su Leibniz*. Milano: Feltrinelli.

Nolan, J.P. 1979. "Kant on Meaning: Two Studies". *Kant-Studien* 70. 113-30.

Nuchelmans, Gabriel. 1983. *Judgment and Proposition from Descartes to Kant*. Amsterdam: North-Holland.

Parsons, Charles. 1984. "Arithmetic and the Categories". *Topoi* 3. 109-121.

Patzig, Günther. 1973. "Die logischen Formen praktischer Sätze in Kants Ethik". *Kant: Zur Deutung seiner Theorie von Erkennen und Handeln*, ed. by Gerold Prauss, 207-222. Köln: Kiepenheuer & Witsch.

Perelman, Chaïm & Olbrechts-Tyteca, Lucie. 1958. *Traité de l'argumentation. La nouvelle rhétorique*. Paris: Presses Universitaires de France.

Pippin, Robert B. 1976. "The Schematism and Empirical Concepts". *Kant-Studien* 67. 156-71.

——. 1979. "Kant on Empirical Concepts". *Studies in the History and Philosophy of Science* 10. 1-19.

Posy, Carl J. 1983. "Kant's Mathematical Realism". *The Monist* 67. 115-34.

Prantl, Carl. 1927. *Geschichte der Logik im Abendlande*. Vol. I, Leipzig: Foch. (First ed. Leipzig: Hirzel, 1855.)

Prauss, Gerold. 1969. "Zum Wahrheitsproblem bei Kant". *Kant-Studien* 60. 166-82.

Riedel, Manfred. 1982. "Kritik der reinen Vernunft und Sprache: Zum Kategorienproblem bei Kant". *Allgemeine Zeitschrift für Philosophie* 7. 1-15.

Risse, Wilhelm. 1964. *Die Logik der Neuzeit*. Vol. I (1500-1640). Stuttgart/Bad Cannstatt: Frommann.

——. 1970. *Die Logik der Neuzeit*. Vol. II (1540-1780). Stuttgart/Bad Cannstatt: Frommann.

Schepers, Heinrich. 1959. *Andreas Rüdigers Methodologie und ihre Voraussetzungen*. (=*Kant-Studien*, Erg.-Heft, 78.) Köln: Kölner Universitäts-Verlag.

Shamoon, Alan. 1985. *Kant's Logic*. Ann Arbor: Univ. Microfilm International. (Ph.D. Diss., Columbia Univ., 1979.)

Simon, Josef. 1972. "Phenomena and Noumena: On the use and meaning of the categories". *Proceedings of the Third International Kant Congress* ed. by L.W. Beck, 521-27. Dordrecht: Reidel.

Stuhlmann-Laeisz, Rainer. 1976. *Kants Logik*. Berlin: de Gruyter.

Tagliagambe, Silvano. 1980. *La mediazione linguistica. Il rapporto pensiero-linguaggio da Leibniz a Hegel*. Milano: Feltrinelli.

Tarski, Alfred. 1944. "The Semantical Conception of Truth and the Foundations of Semantics". *Philosophy and Phenomenological Research* 4. 341-71.

Tetens, Johann Nicolas, 1777. *Philosophische Versuche über die menschliche Natur und ihre Entwicklung*. Leipzig: M.G. Wiedemanns Erben und Reiche (Repr. *Die philosophischen Werke*, vols. I and II, Hildesheim: Olms, 1979.)

Tonelli, Giorgio. 1962. "Der historische Ursprung der kantischen Termini 'Analytik' und 'Dialektik'". *Archiv für Begriffsgeschichte* 7. 120-139.

——. 1967. "Kant und die antiken Skeptiker". *Studien und Materialien zur Geschichte der Philosophie*, vol. 6. ed. by Heinrich Heimsoeth, Dieter Henrich & Giorgio Tonelli, 93-123. Hildesheim: Olms.

Ueberweg, Friedrich. 1924[12]. *Grundriss der Geschichte der Philosophie*, vol. III. Berlin: Mittler.

Wolff, Christian. 1936[2]. *Philosophia prima sive Ontologia*. Francofurti & Lipsiae: in officina libraria Rengeriana (Repr. in *Gesammelte Werke*, ed. by Jean École. Hildesheim: Olms, 1962.)

——. 1740[3]. *Philosophia rationalis sive Logica*. Francofurti & Lipsiae: in officina libraria Rengeriana (Repr. in *Gesammelte Werke*, ed. by Jean École. Hildesheim: Olms, 1983.)

——. 1754[14]. *Vernünftige Gedanken von den Kräften des menschlichen*

Verstandes. Halle (Repr. in *Gesammelte Werke*, ed. by Hans-Werner Arndt. Hildesheim: Olms, 1965.)

Wolff, Robert P. 1963. *Kant's Theory of Mental Activity*. Cambridge Mass.: Harvard Univ. Press.

Wundt, Max. 1945. *Die deutsche Schulphilosophie im Zeitalter der Aufklärung*. Tübingen: Mohr. (Repr. Hildesheim: Olms, 1964.)

PEIRCE'S ANALYSIS OF THE PROPOSITION: GRAMMATICAL AND LOGICAL ASPECTS

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Although he never professed to be a linguist, Charles Sanders Peirce (1839-1914) wrote in his old age:

> I have made some studies of a pretty wide variety of languages, having looked into the logical structure of dozens of all families. I have read more or less Arabic and Ancient Egyptian ... I have constantly used Latin and Greek; and have put some attention to comparative philology so called (NE IV: viii). [1]

A close examination of his works reveals specific evidence supporting this autobiographical statement. Peirce shows an intense lexicographic activity in every field, and not solely as the author of renowned dictionary items regarding logic and philosophy: he was also a keen etymologist, undertook phonetic studies on the evolution of the English language from Shakespeare to his own times and, above all, performed important research on comparative linguistics, devoting particular attention to the relationship between Indo-European and non Indo-European grammars. Also to be found in his still unpublished manuscripts are the outlines of an Arabic grammar, as well as grammatical tables comparing a large number of tongues. [2]

Notwithstanding these very considerable contributions, critical literature has shown very little interest in Peirce's linguistic studies: historians of linguistics seem unable to find an appropriate place for his conceptions within the framework of their discipline. [3] And while there is certainly no shortage of comparative works on the theories of Peirce and Ferdinand de Saussure (1857-1913), they tend to concentrate on the more general semiotic aspects, rather than the specifically linguistic ones (see, e.g., Delledalle 1979, Malmberg 1977). Among the linguists, the most conspicuous exception in this regard is Roman Jakobson (1896-1983), although his enthusiastic eulogizing of Peirce for the linguistic significance of his semiotic categories often appears to be excessively vague. [4]

Undeniably, Peirce is more semiotician than linguist. However, this in itself does not explain the lack of attention accorded to him by historians of linguistics. First and foremost, we must take into account the fragmentary character of his works, part of which remains unpublished; however, of greater relevance still, is the eccentricity of his approach which favours the idea of a universal and "speculative" grammar, in sharp contrast to the prevailing tendencies characterizing the heyday of historical and comparative linguistics.[5] In fact, although Peirce was familiar with and, in some cases, esteemed the work of some nineteenth-century linguists,[6] his main attitude is one of strong aversion towards the grammatical conceptions circulating among his contemporaries, as well as towards the European grammatical tradition in general. As far as the latter is concerned, the only exception to this hostility is the medieval speculative grammar, to which he frequently makes direct reference, and particularly the work on *modi significandi* by Thomas of Erfurt.[7] Present-day linguists, followed by historians of linguistics, seem to have reciprocated Peirce's critical and negative sentiments by ignoring his writings more or less completely.

A particularly severe judgement of the ignorance of linguists is encountered in Peirce's conclusions drawn from a comparison of the various categorizations of parts of speech and of the different functions assigned to word-classes in several grammars which he examined. Peirce himself took his cue from typological studies on the classification of languages and set out to identify fundamental common grammatical categories, unvarying structural characteristics and linguistic universals. In doing so, he undertook a form of enquiry which had long fallen into disuse. His comparative tables took into account a vast range of languages — from Eskimo to Australian, from some American Indian tongues to Ancient Egyptian and Basque — to mention just a few of the less familiar ones. In his analysis, Peirce attributes great importance to certain features: the conspicuous presence or absence of some parts of speech (common nouns and copula, for example, are not found in all languages); the variety of cases of subject declension, if declined; the functions of pronouns, especially demonstrative and relative pronouns.

In principle, Peirce does not intend to deny linguists the task of utilizing these comparisons to establish categories and principles of universal validity. In his opinion, there is nothing to prevent the evolution of "comparative syntax" towards the creation of an effective grammar of *modi significandi*, or speculative grammar. However, he could not refrain from emphasising that the cultivators of "the art of reasoning" had always received insufficient and misleading advice from grammarians (MS 595: 21-22). According to Peirce, the main flaw of our linguis-

tic tradition arose from the fact that the "Arian grammar" had always been treated as if it were "universal grammar", an error comparable to that of the botanist who ascribes the characteristics of phanerogams to all existing plant varieties (CP 4.48). This situation was aggravated by the misleading terminology adopted in grammar books, based on Priscian's nomenclature (often used as a model in later times), which was itself derived from frequently incorrect or vague translations from Greek.[8] To remedy this state of affairs, Peirce set himself the task of formulating a radical theoretical re-elaboration of the basis of all possible grammars.

As is known, "speculative" grammar (sometimes referred to as "pure" or "formal") represents one of the principal fields of Peirce's semiotic theory, along with critical logic and speculative rhetoric.[9] As well as serving to examine "the general conditions of symbols and other signs having significant characters" (CP 2.93), it also provides a tool for analyzing the essential elements of propositions, by specifying their basic components, regardless of the language in which they occur (CP 2.315 ff.). The latter point is the subject of the present work which will be based, for the most part, on Peirce's mature (post 1880) writings, leaving aside the evaluation of his logical and semiotic thought during the earlier years, in order to achieve an outline of his definitive views with regard to the (linguistically expressed) proposition.[10]

Speculative grammar must therefore depart from a comparative study of actual grammars so as to refute the linguistic and logical theses regarding proposition components, which are found to be lacking in adequate generality. With the aim of establishing the parts of speech fundamental to the construction of a proposition, Peirce sets out, first of all, to identify those which appear dispensable within the context of a universal grammar. Among such parts of speech, he identifies the common noun as a particularly striking example. Whilst acknowledging its important place in the languages with which we are most familiar, Peirce considers the common noun to be a purely incidental grammatical form:

> There are more than a dozen different families of languages, differing radically in their manner of thinking; and I believe it is fair to say that among these the Indo-European is only one in which words which are distinctively common nouns are numerous (CP 4.56).

In most other languages, general class-names and adjectives are treated as *rhemata*, i.e. as "part of some verbs" (CP 2.328); logically speaking, their function can therefore be fulfilled by verbs: "If a language has a verb meaning 'is a man', a noun 'man' is a superfluity" (CP 3.459). Also mistaken, in Peirce's view, is the doctrine expounded by many tra-

ditional logicians which breaks the proposition up into three principal
terms (subject, copula, and predicate), operating a transformation of
verbs into copula plus class-name or adjective, should the copula be
"unexpressed". Logicians and linguists should be made aware of the
fact that, in many languages (even Latin and Greek), the connection be-
tween words can be established by simple juxtaposition, thus omitting
the copula, or by using other parts of speech. One of Peirce's favourite
examples of this occurrence is to be found in Ancient Egyptian, where
the copula is replaced by an expression having the force of a relative
pronoun, and the statement "man is mortal" can be approximately cor-
related to "what is spoken of as man, which what is spoken of is mor-
tal" (CP 2.354). These considerations lead Peirce to the conclusion that
the "is" should be interpreted "as an inseparable part of the class
names, because this gives the simplest and mosty satisfactory account of
the proposition" (CP 2.328). [11]

Having done away with the "privileged" role of the copula and as-
similated the function of nouns and adjectives into that of verb phrases,
Peirce goes on to anticipate the objection that, even if we can do with-
out common nouns in predicate position, it is difficult to avoid them or
eliminate expressions incorporating them as subjects of the proposition.
Here again, Peirce begins by contesting the traditional view of a gram-
matical category, i.e. the canonical definition of the pronoun as a mere
substitute, a word used instead of a noun:

> There is no reason for saying that *I, thou, that, this*, stand in place of nouns; they
> indicate things in the directest possible way. It is impossible to express what an as-
> sertion refers to except by means of an index. A pronoun is an index. A noun, on
> the other hand, does not indicate the object it denotes; and when a noun is used to
> show what one is talking about, the experience of the hearer is relied upon to make
> up for the incapacity of the noun for doing what the pronoun does at once. Thus,
> a noun is an imperfect substitute for a pronoun (CP 2.287n.)

With this, Peirce maintains that it is the pronoun, in particular the de-
monstrative and personal ones, which directly indicates an object, where-
as the common noun, when used as subject, serves this function only
in an indirect and imperfect way. We shall return to this point later on.
For the moment it is sufficient to note that, in Peirce's view, the use of
the term "demonstrative" is inappropriate, in common with almost all
current grammatical terminology, since pronouns like "this" and "that"
do not demonstrate or show but indicate (MS 1214). The function of the
demonstrative pronoun is therefore clear and must not be viewed in
terms of mere surrogation of nouns; in fact, even more inappropriate
and misleading is the term "pronoun" itself, "a literally preposterous
designation, for nouns may be more truly called pro-demonstratives"

(CP 3.419). [12]

Thus, Peirce feels justified in asserting that the received forms of proposition analysis are seriously undermined by the provincial restriction of their reference models to Indo-European languages and grammars. However, Peirce's own studies seem to account for only two basic types of invariants: verbs and verb phrases, which also assume the function of adjectives and (partially) nouns, and pronouns, particularly demonstratives, *qua* paradigmatic indexical expressions. All propositions — in order to qualify as such — must therefore possess both a designative and descriptive part, which must be inter-connected but at the same time distinct. To put it in more familiar terms, each proposition has a structure based on the relationship between a subject element and a predicate element which do not necessarily correspond to the grammatical definition of subject and predicate: the former *nominat*, the latter *significat* something (CP 5.471). [13]

The most outstanding difference between the Peircean predicate and the traditional categorematic term in predicate position lies in the explicit recognition of the former's fragmentary character: in fact, the isolation of a predicate in a proposition is performed by striking out one or more of its subjects. In order to emphasize the unsaturated and predicative nature of verbs and their assimilated parts of speech, Peirce adopts a representation system (now in general use) employed mainly within the context of his logic of relations: where the subject(s) of the proposition is (are) required, he places a dash to indicate the corresponding lacuna(e), as in "— gives — to". In general "that which remains of a Proposition after the removal of its subject is a Term (or Rhema) called its Predicate" (CP 2.95). Unlike Frege, who proposed to substitute the traditional distinction between subject and predicate with one distinguishing between function and argument, Peirce prefers to retain the former, although radically modifying it. This difference should not overshadow the important common features of their analyses, emphasized by the fact that both authors make frequent use of the chemical metaphor saturated/unsaturated; it is, nonetheless, a clear indication of Peirce's greater sensitivity and interest, albeit critical, with regard to the logico-grammatical tradition. [14] In addition to this, it is worth noting how Frege's rigid categorial distinction between object-proper noun on the one hand, concept-functional expression on the other, entails repercussions which we do not find in Peirce. This point will be returned to further on, when examining his category assignment of quantified expressions. Before moving on, however, it is important to mention some of the other approaches used by Peirce in order to formulate and sustain his thesis that the essential structure of the proposition is based on the

relationship between subject and predicate.

To begin with, he undertakes a rather complex process of "deduction" in terms of semiotic categories (for which space does not permit discussion here), leading to the conclusion that the proposition is a dicisign made up of two fundamental parts, one indexical and the other iconic, connected together (CP 2.310-11). [15] According to the Peircean sign classification, the subject of the (linguistic) proposition is an indexical word (or, more precisely, a *subindex*), whose function is to direct attention towards a specific object; the predicate is an iconic word (or *hypoicon*), represented by the proposition as a quality of the said object. [16] The specific characteristic of indices is their direct, physical, dynamic relationship with the respective objects. In the case of symbolic indices within propositions, this relationship is not established in any literal sense, but through the production of a given effect on the hearer, thus forcefully attracting the attention of the interpreting mind towards their objects. This feature is shown by a class of linguistic signs which includes proper names, prepositions, verb tenses and deictic expression in general, together with demonstrative and personal pronouns. However, there are different kinds of symbolic indices which operate in a purely indirect and mediate way, providing precepts or rules for the identification of objects to which the previously mentioned indices must be assigned: these mainly consist of selective pronouns or quantifiers, especially universal and particular quantifiers. [17] With regard to the linguistic sign class involving an icon, this obviously covers adjectives, common nouns and verb phrases (excluding all considerations of tense).

Peirce takes his approach a step further when dealing with the relationship between the breadth and depth of the proposition-forming terms in some assumed state of information: [18]

> An ordinary Proposition ingeniously contrives to convey novel information through signs whose significance depends entirely on the Interpreter's familiarity with them; and this it does by means of a "Predicate", i.e. a term explicitly indefinite in breadth, and defining its breadth by means of "Subjects", or terms whose breadths are somewhat definite but whose informative depth... is indefinite, while conversely the depth of the Subjects is in a measure defined by the Predicate (CP 4.543).

Peirce's viewpoint, at least in his maturer phase, is not limited to the traditional consideration of the nexus between extension and intension of terms; it is widened to include propositions and arguments as such. [19] As far as the proposition is concerned, its (informed) breadth or demonstrative application is either identical to the breadth of its subject term, or may be considered as "the aggregate of a possible state of things in which it is true" (CP 2.407 n. 1), or, again, as any proposition which implies the proposition in question. Conversely, the (informed) depth (or

significative import) of a proposition is either identified by its predicate, or provided by further propositions implied by it, or alternatively, may be considered as "the total of fact which it asserts of the state of things to which it is applied" (CP 2.407 n. 1).

One of the aims of the present work is to examine Peirce's attempt to establish the general validity of his structural analysis of the proposition; to this end, we must begin by studying what appear to be the "paradigm cases" and then move on to consider possible counter-examples to the kind of propositional construction in question. Prior to this, however, we have to make a necessarily brief *excursus* regarding a question which will prove to be of considerable relevance to the above discussion.

As already seen, in Peirce's semiotic terminology the proposition is referred to as a dicisign or dicent symbol. Since it is a sign which is governed by conventional rules, it must be considered as a legisign or general type, and not a token or instance of its application (CP 2.246). At this point, we should try to establish the rules in question. If they refer exclusively to the formation and combination of signs, as Peirce sometimes seems to maintain, this would mean that (linguistic) legisigns are relative to specific languages: declarative sentences, such as "il pleut", "es regnet" and "it is raining" whould therefore be different legisigns. However, Peirce frequently reiterates his belief that they express the same proposition: "It is one and the same proposition every time it is thought, spoken, or written, whether in English, German, Spanish, Tagalog, or how" (MS 599: 5-6).

It follows from this that different legisigns can be associated with interpretative rules which permit the attribution of an identical "meaning" to their replicas or tokens. None the less, this clarification does not in itself provide sufficient explanation of Peirce's oscillation between two different viewpoints, one considering the proposition as a legisign and, the other, as something quite distinct and "superior", whose expressions are signs.[20] Besides this, Peirce very rarely refers to the proposition in terms of the meaning of a sentence (see, e.g., MS L75: 396). However, what the maturer Peirce does do, and repeatedly, is to formulate and emphasize the distinction between the content of a sentence and its force, i.e. between the propositional content and the linguistic act in which the content is conveyed, with particular reference to the act of assertion. Indeed, in one of his most significant passages, he writes:

> ...the proposition in the sentence, "Socrates est sapiens", strictly expressed, is "Socratem sapientem esse". The defence of this position is that in this way we distinguish between a proposition and the assertion of it; and without such distinction it is impossible to get a distinct notion of the nature of a proposition. One and the same proposition may be affirmed, denied, judged, doubted, inwardly inquired

into, put as a question, wished, asked for, effectively commanded, taught or mere-
ly expressed, and does not thereby become a different proposition (NE IV: 248).

Although Peirce's later writings still fail to present a totally uniform use
of the terms "proposition" and "assertion", we do find that the distinc-
tive characteristics of the assertoric proposition are often analyzed with
particular attention. Peirce even goes on to connect this analysis to his
assessment of the relationship between judgement and proposition:
judgements, which by definition represent an act of conscience in which
we perform the recognition of a belief, are presented by Peirce as cases
of "mental and self-addressed" assertion (CP 5.424 n. 1).

Peirce's conception is in many ways more articulate than those of his
contemporary Frege, even though the latter is generally considered as
the modern father of distinction between assertion and judgeable con-
tent. While Frege confines himself to a consideration of the assertion as
the public counterpart of an inner judgement act, Peirce's analysis of
the essential characteristics of the speech act of assertion reveals remark-
able similarities to that undertaken by J. Searle (1970), today accepted
as canonical.[21] Despite the fragmentary nature of Peirce's observations,
it is fairly easy to trace in them the formulation of conditions more or
less equivalent to the rules which, according to Searle, govern such acts
of speech. In particular, the speaker must have evidence for the truth of
the proposition and believe it; moreover, the proposition must represent
a state of things and therefore avoid obvious and irrelevant information.

Peirce's discussion of the act of assertion also includes several prag-
matic and normative features, neglected by Searle probably to side-step
any mixing of perlocutory effects with components of the illocutionary
act. To begin with, we have the speaker's intention or endeavour to in-
duce the potential or real interlocutor to believe the asserted proposi-
tion, "for clearly, every assertion involves an effort to make the inten-
ded interpreter believe what is asserted" (CP 5.546). Far from just
saying something, the act of assertion is a kind of activity which not
only has a purpose, but may involve (potential) institutional and social
repercussions. It represents a form of "contract" which is backed up by
rules, accepted by the parties involved. The transgression of the said
rules is not without consequences: "The act of assertion is not a pure act
of signification. It is an exhibition of the fact that one subjects oneself
to the penalties visited on a liar if the proposition asserted is not true"
(SS: 34).

Thus, in making an assertion, the utterer takes upon himself the re-
sponsibility for the truth of the asserted proposition, accepting "a vol-
untary self-subjection to penalties" (NE IV: 249), should his utterance
prove false. Peirce's favourite analogy, perhaps his paradigm of asser-

tion, is the statement made under oath before a court of law: "To find an easily dissected example, we shall naturally take a case where the assertive element is magnified — a very formal assertion such as an affidavit. Here a man goes before a notary or magistrate and takes such action that if what he says is not true, evil consequences will be visited upon him" (CP 5.30). Peirce therefore performs a careful and clear analysis of the relationship between proposition and assertion during a period in which this extremely complex subject was the focal point of debate among numerous philosophers, stimulating a controversy which endured well into the twentieth century and, indeed, is still alive today. [22]

Nevertheless, we must bear in mind that when Peirce examines the essential components of the proposition or defends his thesis concerning its subject-predicate structure, he tones down the distinction between proposition and assertion, preferring to concentrate on certain specific aspects of the illocutory act of assertion and the assertive use of the proposition in general. He often defines the proposition as something "capable of being asserted" or "assertible" (e.g. CP 8.337, 5.424 n. 1), although he sometimes gives greater emphasis to the conditions and rules of assertibility, as opposed to propositional content. In fact, in one of the passages quoted above where he draws his distinction between assertion and proposition, he goes on to add: "I grant that the normal use of a proposition is to affirm it; and its chief logical properties relate to what would result in reference to its affirmation" (NE IV: 248). Moreover, again within the same context, Peirce points out that an expression like "Socratem sapientem esse" not only shows the invariance of the propositional content as strictly understood, "but has the advantage of marking the essentially fragmentary character of the proposition" (MS 517: 37). With this, Peirce seems to suggest that his structural analysis of the proposition shoul be set, for a better understanding, within a framework which accounts for certain characteristics of the act of assertion. [23]

At this point, we are now presumably better equipped for an examination of the Peircean thesis which takes into account both examples which seem to confirm it, as well as instances which apparently disprove it. To begin with, we shall consider some cases of "categorical" propositions (to use the traditional term, also adopted by Peirce). An elementary proposition with a proper name in subject position would, at first glance, appear to offer an exemplary correspondence to Peirce's thesis. Yet, is this really the case? While demonstrative and personal pronouns strictly fulfil the specific requisites of a *subindex*, the use of the term "Napoleon" does not establish a definite connection with the

individual in question, nor even require a direct knowledge of the said individual. Aware of this difficulty, Peirce attemps to stipulate the conditions in which a proper name may be assigned an authentic identification function:

> A proper name, when one meets it for the first time, is existentially connected with some percept or other equivalent individual knowledge of the individual it names. It is *then*, and *then*, only, a genuine Index. The next time one meets with it, one regards it as an Icon of the Index. The habitual acquaintance with it having been acquired, it becomes a Symbol whose Interpretant represents it as an Icon of an Index of the Individual named (CP 2.329).

However, such elucidations are perhaps not in themselves sufficient to dispel our doubts. If the quoted passage is treated as a mere comment on the already-mentioned conception in which nouns are "substitutes" of pronouns, then Peirce's viewpoint appears in some way similar to that later maintained by Russell (1905), for whom only demonstrative reference is able to provide real indexes, proper names in the logical sense. On the other hand, it is very likely that, to avoid its solipsistic repercussions Peirce would reject Bertrand Russell's (1872-1970) theory which considers proper names as names of particulars or sense-data (Russell 1910-11); moreover in Peirce's view, the fact that natural language proper names are "indirect" forms of indication does definitely not imply that their reference is determined by their sense or by any form of co-designative description. [24] What he is probably trying to get across is the idea that, to have their reference fixed, proper names must be introduced through demonstrative pronouns; consequently, they are usually a specific kind of symbol in so far as they have a deictic origin in the perceptual situation in which the object was (or was represented as) present (cf. Godfrey-Smith 1976, Pape 1982).

   Whatever his position may be as regards the proper name, Peirce is firm in his belief that his class of indicatives which can function as subjects can be extended to include abstract nouns such as "whiteness", i.e. (to use his terminology) nouns of (not merely fictitious) substances, or *entia rationis*, having a mode of being consisting "in the truth of propositions of which the corresponding concrete term is the predicate" (CP 4.235). A proposition like "snow is white" is thus transformed into the logically equivalent "snow possesses whiteness", by means of a process called *subjectal* or *hypostatic abstraction* which produces an additional subject corresponding to an abstract character (or also to a collection of concrete things), based upon the predicate of the initial proposition. [25]

   At this juncture, we need a closer examination of the role of concrete nouns or expressions containing them in the subject position of a statement. Whereas, in the case of proper names, a degree of familiarity with

the denoted object is presupposed on the part of both speaker and interpreter, in the case of a common noun it is possible that the interpreter has no pertinent knowledge. We can therefore assume — according to Peirce — that the noun indefinitely names one of the many (recollected or imagined) objects called to the interpreter's mind (MS 516: 40). The thesis which attributes to nouns the capacity of denoting not determinate objects (even if abstract), but something indeterminate, is clearly in need of more thorough investigation and interpretation. To this end, Peirce resumes the medieval scholastic theory of *individuum indeterminatum* (or *vagum*). By way of example, he takes expression such as "a certain man", whose function is to refer to an individual but in an indeterminate manner: "the phrase *individuum vagum* (means) a single person or thing, designated as one in a number, but without its proper name or any adequate description" (CD: 6682). [26] In order to provide further elucidation on this point, Peirce resorts to the conception of a peculiar or secondary kind of indexical symbol, i.e. the selective pronoun (or quantifier). These do not denote determinate objects, but provide precepts which serve to attach indexes of the primary kind (personal or demonstrative pronouns, or proper nouns) to such individuals; looking at it from a different point of view, they guide the speaker and interpreter in their choice of object or moment of experience to which to attribute a predicate (see, e.g., CP 2.295, 2.339).

Peirce distinguishes between two fundamental kinds of indeterminacy: implicity or explicitly quantified expressions, functioning as the subject of propositions, can be either indefinite (particular) or definite (general). We therefore obtain expressions which are respectively either existentially or universally quantified, while a term resulting both definite and individual is referred to as "singular" (see, e.g., MS 9, 283, 515). From the viewpoint of formal logic, it would be sufficient to characterize terms as "indefinite" or "general", in so far as they fail to comply with the principle of contradiction or that of the exluded middle respectively. However, Peircean theory of selective pronouns and rules of selection can only be fully understood within the context of his conception of assertion. It is not surprising, therefore, that Peirce's analysis of the meaning and function of quantified expressions is markedly different from Frege's: the former endeavours to comply with the medieval tradition (doctrine of *individuum vagum*, and theories of *suppositio* and *distributio*), [27] at the same time attempting to overcome the serious limitations of George Boole's (1815-64) logical interpretation of quantifiers and, finally, making use of certain conditions established for performing the linguistic act of assertion. The interaction of these different lines leads Peirce to some very original and interesting results which I will at-

tempt to summarize.

Although sharing the common purpose of ultimately reaching mutual agreement, speaker and interpreter assume different roles, acting respectively as the advocate and opponent of any asserted proposition. According to Peirce's theory of assertion, it is always the speaker who must assume the greater responsibility for the possible falsity of the proposition in question; on the other hand, it is in the interpreter's interest to discover any falsity asserted by the speaker:

> The utterer is essentially a defender of his own proposition and wishes to interpret it so that it will be defensible. The interpreter, not being so interested, and being unable to interpret it fully without considering to what extreme it may reach, is *relatively* in a hostile attitude, and looks for the interpretation least defensible (MS 9: 3-4).

Thus, according to Peirce, the subjects of quantified propositions have a kind of referential indeterminacy or interpretational latitude: their further determination, aiming at finding confirming or disconfirming instances and thus, in the ultimate analysis, establishing the truth or falsity of the proposition in question, occurs by means of the exchange or "game" of rights enacted by the speaker and interpreter. When the proposition is universally quantified, i.e. consists of a general subject, the speaker in some way confers on the interlocutor the right to choose the singular object which he takes the index to represent. A selective pronoun like "any" means that the interpreter can choose the individual object corresponding to the subject term of the proposition, with no restriction of any kind imposed as regards the individual which might disconfirm it. The presence of the quantifier "some" authorizes the speaker to select freely the object represented by the index, i.e. the interpretation of the subject term:

> These are the two cases: first, that in which the auditor is to take any object of a given description, and it is left to him to take any one he likes; and, secondly, the case in which it is stated that a suitable object can be found within a certain range of experience, or among the existent individual of a certain class. The former gives the *distributed* subject of a *universal* proposition, as, "Any cockatrice lays eggs". It is not asserted that any cockatrice exists, but only that, if the hearer can find a cockatrice, to that it is intended that the predicate shall be applicable. The other case gives the *undistributed* subject of a *particular* proposition, as "Some negro albino is handsome". This implies that there is at least one negro albino (CP 2.357).

Recent studies have pointed out the similarity between Peirce's approach and P. Lorenzen's dialogic logic and, above all, the interpretation of quantifiers according to J. Hintikka's game-theoretical semantics — at least under the perfect information presupposition (see Brock 1981c, Hilpinen 1982). Although Peirce never openly alludes to a

"game", it sometimes seems to be clearly implied, especially when he affirms that

> whichever of the two makes his choice of the object he is to choose, after the other has made his choice, is supposed to know what the choice was. This is an advantage to the defense or attack, as the case may be (MS 9 § 3).

Yet, there is another aspect of Peirce's treatment of quantifiers which is also worthy of attention. As is known, Peirce made various attempts at solving the question of the logical rendering of the quantifiers "some" and "any" while developing and modifying Boolean logic. When he finally succeeded, it was on the suggestion of his student Oscar Howard Mitchell (d. 1889), and, apparently, independently of Frege's quantification theory. In fact, in the symbolic representation of a proposition, he distinguishes "a pure Boolean expression referring to an individual and a quantifying part saying what individual this is" (CP 3.393). In his most elaborate formulation of the above, we find (in monadic predicate calculus) expressions like "x_i", i.e. predicate letters with bound individual variables (indices, selectives) attached on the one hand, and variable binding operators, i.e. the universal ("Π") and particular ("Σ") quantifiers, on the other. [28] If we consider this conception and representation of quantified expressions in the light of his assertion theory, the rules establishing the dialogic use of selectives and selective pronouns constitute a method of substituting quantified variables with determinate expressions or proper names of appropriately selected individuals. Within this framework, we see that the quantifier phrase is considered as a sort of singular term or as an expression which ultimately denotes particular individuals. This view is totally different from the Fregean interpretation of such phrases as second-level functional expressions.

I have already mentioned the affinity of the Peircean approach with Hintikka's theory of quantifiers. [29] However, I do not intend to give the impression that Peirce actually anticipated this theory in all its aspects. First of all, although he sets up a relationship of defence and attack between speaker and interpreter, he fails to formulate a notion of truth *qua* winning strategy (see Hilpinen 1982). [30] Moreover, Peirce suggests a form of interchangeability between the issue of the denoted individual, that of the further determination of the breadth of the proposition (or its subject component), and that of its confirmation or disconfirmation, truth or falsity; and he does this, without always providing clarification as to the relationship between the various issues. In enforcing his theory, Peirce attempts to apply, in the most symmetrical way possible, the paradigm of logical duality and of distribution of rights and responsibilities between the interlocutors: duality between logical finite product

and sum, and duality between universal and particular quantifiers, also extended to the modalities on the basis of the analogy between the necessity and possibility operators on the one hand, and the quantifiers themselves on the other. In doing so, Peirce imposes considerable restrictions on his theory of quantification *qua* selection: on the basis of his examples, the universe of discourse of his dialogic logic appears a finite, non-empty universe, which is common to the experience of both interlocutors. Thus it is assumed that what is spoken of is *known* to exist and that the individual to be selected by either speaker or interpreter is an "intended" object (CP 2.295), which is chosen, according to their respective intents, in compliance with the established rules. This opens the field to contextual and *lato sensu* intensional elements in cases where no clear analogy exists between selection procedures and ordinary logical rules of universal and particular instantiation (see Brock 1975).

To complete his examination of the possible counter-examples to his propositional structural analysis within the field of categoricals, Peirce looks into the question of impersonal propositions as these appear to have no indexical subject. In cases of this kind, says Peirce, it is the environmental circumstances, known to the experience of the speaker or common to the interlocutors, which provide the reference of the indexical part, presumed absent:

> Some logical writers are so remarkably biased or dense as to adduce the Latin sentences *fulget* and *lucet* as propositions without any subject. But who cannot see that these words convey no information at all without a reference (which will usually be indexical, the index being the common environment of the interlocutors) to the circumstances under which the Firstnesses they signify are asserted to take place? (CP 2.318).

With this, Peirce confirms the impossibility of formulating propositions which entirely exclude the indexical or referential element in favour of the descriptive one; on the contrary, he maintains that every proposition implicitly possess, in common with others, a subject which is "the universe of all universes" (CP 5.506), alongside other, less general partitions of the totality of objects making up the various universes of discourse, real or ficticious. Whatever the case may be, universes "cannot be described" but "only denoted by Indices" (CP 4.544). In view of this, it is no longer surprising that Peirce should include the circumstance of emission and use of propositions in his analysis, even if — as remarked above — this creates problems for both his distinction between proposition and assertion, as well as his identification of the proposition as legisign: in fact, the indexicality category serves the function of rendering deictic and referential expression (relatively) homogeneous, creating a certain continuity among them.

What is likely to seem more suprising is Peirce's attempt to include, within his analytical framework for categorical propositions, those propositions which he refers to as "hypothetical", in accordance with the terminology of Boole and traditional logicians: i.e. propositions grammatically formed of more than one categorical. The majority of nineteenth-century logicians accepted the prevailing traditional thesis affirming the priority of categorical over hypothetical logic: propositions such as "if it snows, it is cold" were, in the ultimate analysis, taken to be disguised categoricals of this kind: "all cases (occasions, moments) in which it snows are cases (occasions, moments) in which it is cold". None the less, compared to traditionalist attempts at reducing hypotheticals to categoricals, Peirce's own approach appears quite peculiar. To begin with, he has no uniform method of treatment and interpretation as far as hypothetical propositions are concerned. He sometimes correlates them to "possible states of things" (e.g. CP 2.347) or "occasions" (e.g. CP 2.201) or situations, while in other case he refers to them as "coexistences" of the true replicas of antecedent and consequent of a conditional proposition (CP 2.316). At the same time, he frequently treats the subject of a proposition as being interchangeable with an object or occasion or, more generally, as a situation in which an attribute or description is applied. Secondly, at certain stages of his development, he favoured, with a polemic intent, the opposing thesis asserting the reducibility of categorical to hypotheticals. [31] However, he finally came round to the conception of the superficial character of the difference between the two kinds of propositions, since, from a formal point of view, they are "one in essence" (CP 3.439).

Moreover, the ultimate adoption of this viewpoint fits in with Peirce's gradual cancelling out of the logico-structural distinctions between terms, propositions and arguments: "The relation between subject and predicate, or antecedent and consequent, is essentially the same as that between premiss and conclusions" (CP 4.3). In fact, although the mature Peirce was fully aware of the distinction between class inclusion, the conditional relation among propositions, and logical consequence, he made use of only one symbol (" —< ") for these three relations, in view of their formal mutual resemblance and, particularly, their common structural attribute of transitivity. According to R. Dipert, this fact explains the rather disappointing results which emerge from the various attempts to interpret a fragment of Peircean logic as a form of standard Fregean-Russellian propositional calculus: "Peirce is interested in developing a formal calculus whose intended interpretation is indifferently propositional logic, the logic classes, or a metalogical theory of logical consequence, depending on what the reference of the terms is taken to

be" (Dipert 1981: 581). [32]

Thus, after the introduction of quantifiers into Peircean logic a formula such as "$\Pi_i(h_i \prec d_i)$" may be open to a variety of interpretations, for example: "all h's are d's", "if i is h, it is d", "if h then d" (in the last case, assuming i to be ranging over occasions). Peirce writes: "This form equally serves for a universal categorical or a conditional proposition" (2.354). Categoricals and hypotheticals are therefore brought together in a third kind of (implicitly or explicitly) quantified statements, giving greater emphasis to their common structure. Such quantified statements are also metastatements, since the symbol " $\prec$ " of Peircean formal theory not only corresponds to the object language material conditional or class inclusion, but also serves to express metalinguistic derivability.

This feature may also be seen as a development or outcome of the relative ambiguity residual in Peirce's conception of the relationship between proposition and assertion. However, the merging of hypotheticals with categoricals also emphasises other unorthodox, though interesting aspects of Peirce's analysis: although normally accepting the material conditional in his logic, he considers it a restriction to the actual state of things of a conditional ranging over all possible cases in a universe of discourse — "an *ordinary* Philonian is expressed by saying, 'In any possible state of things i, either A_i is not true, or B_i is true'" (CP 3.444). In Peirce's work this reference to the modal aspects of the "proper signification" (CP 3.446) of a conditional is not encountered in isolation, even though his modal logic is somewhat underdeveloped. As mentioned above, a modal characterization does emerge from the albeit fragmentary and sparse information provided by Peirce on the nature of referents of propositional clauses in hypotetical statements which he alternately describes as "occasions", "states of things" and "situations" Sometimes such clauses appear to represent mere facts; however, we find elsewhere that Peirce takes propositions to denote universes considered as "series of possibilities" (MS 789), and, therefore, "occasions" should be taken as equivalents to partitions of possible worlds.

Nevertheless, not even these considerations bring any substantial modification to bear on the thesis of the deep logical similarities between hypothetical and categorical propositions. In fact, whatever the ontological significance of the distinction between occasions and objects, Peirce insists that it is irrelevant, or difficult to apply in logical terms without introducing spurious, psychological elements:

Common nouns are primitively used to denote 'sense-percepts', while clauses of hypotheticals are commonly used to denote situations which sometimes occur. One denotes the object, the other the occasion of attention. There is a psychological dis-

tinction between them. But distinctions ought not to be drawn in logic which could
lead up to no discriminations between a good and bad argumentation (CP
2.353). [33]

Thus, according to Peirce, his examination of the structural characteris-
tics of hypothetical propositions, particularly those emerging from their
logical and formal treatment, confirms his general analysis of the nature
and structure of the proposition, based on speculative grammatical con-
siderations.

It is by no means an easy task to draw a balanced conclusion from
the above observations. As we have seen, Peirce associates a huge var-
iety of themes and suggestions to the relatively traditional conception
regarding the propositional subject/predicate structure. My own attempt
at providing a concise and, as far as possible, coherent reading of his
thesis cannot compensate for the fact that Peirce's systematic approach
is frequently undermined by his fragmentary analytical presentation and
by the fact that many of his results are the fruit of a complex process of
elaboration spanning several decades.

In the text and notes, I have mentioned only some of the currents in-
fluencing Peirce, a philosopher and logician capable of probing new
areas and ideas, at the same time remainig faithful to certain traditional
bonds. I have preferred to lay stress on those cases in which he seems to
anticipate modern conceptions and theories, such as the speech act the-
ory and game-theoretical and possible-worlds semantics. Yet this is hardly
sufficient to do him justice: as has been stated (rather emphatically,
though none the less effectively), Peirce "finished almost nothing, but
he began almost everything" (Hacking 1983: 61).

Regarding other issues discussed in this paper, it should be mentioned
that among contemporary linguists, the principle that the syntactical nu-
cleus of a proposition is made up of two components, a nominal and a
verbal expression, having the status of universal categories, is widely ac-
cepted (cf. Lyons 1977: ch. 11). Several commentators have also spotted
a resemblance and parallelism between Peirce's account of names and
indices and S. Kripke's account of names as rigid designators (see
Godfrey-Smith 1976), and between the cognitive and semantic radication
of the subject-predicate scheme in Peirce with the one proposed by P.F.
Strawson (cf. Ross 1976).

Without doubt, in Peirce's case as in others, any discussion of fore-
sights and later influences runs the risk of over-generalization and infi-
nite regress. Indeed, I have sometimes remarked that there are also limi-
tations and divergences in his thought with respect to subsequent devel-
opments and results. Moreover, in certain cases, there is a lack of docu-
mentation regarding contacts between the individual authors concerned:

and the task of tracing reciprocal and subsequent influence becomes particularly problematic when dealing either with unpublished writings or works of limited circulation. Finally, it is perhaps even more difficult to uncover (and follow through) the real historical tracks of the various presumed influences as far as their most recent outcomes. None the less, in Peirce's case, the mass of anticipations is so dense and his life period so recent that the existence of such tracks appears highly likely. An investigation of this kind, with reference to the issues discussed in this work, is still largely to be performed.

NOTES

1) Sigla for Peirce's works are listed in *References*, A.

2) For an idea of the vastness of Peirce's interests in this field, it is sufficient to read through the titles and brief content descriptions of his manuscripts, under the heading "Linguistics", in Robin (1967).

3) Romeo (1979) has recently lamented this lack of interest.

4) Jakobson (1980: 31) even goes as far as to call Peirce "the greatest pioneer of structural analysis". However, the impression of vagueness and exaggerated enthusiasm is mitigated by Jakobson's outline of the historical links between the evolution of linguistics and semiotics (1980: 1-29). Moreover, several of his phonetic and grammatical theories seem to have been formulated under the influence of Peirce's writings (see Lizka 1981). I was not able to take account of Pharies (1985), published after the paper was completed. However, it would seem to represent another important exception with respect to my survey, as it focuses on the relevance of Peirce's semiotics for modern linguistics.

5) This approach made an early appearance between the 1860's and '70s in Peirce's work. However, by the late nineteenth and early twentieth century, it was no longer an isolated one, especially among philosophers of language such as Gottlob Frege (1848-1925), Edmund Husserl (1859-1938) and Anton Marty (1847-1914). Unlike Peirce, these authors have received a certain attention among historians of linguistic thought, as is clearly shown by a brief consultation of Parret (1976).

6) Together with Archibald Henry Sayce's (1845-1935) works, Byrne (1885;[2]1892) was among the most favoured sources for Peirce's linguistic studies.

7) In keeping with tradition, Peirce attributes Thomas of Erfurt's *De Modis Significandi sive Grammatica Speculativa* (Bursill-Hall 1972) to Duns Scotus.

8) Just one example of this is Peirce's criticism of Priscian's use of "indicative" to translate the term "apophantic". According to Peirce, "declarative" would have been more apt. In this regard, see in particular MS 1214, entitled "Terminology of Grammar" in Robin (1967).

9) This three-part division corresponds to the traditional *trivium*: grammar, logic and rhetoric. Kloesel (1981) takes into examination the similarities between Peirce and Thomas of Erfurt as regards the aims and general features of speculative grammar.

10) There is a chapter dealing with the proposition in the *Collected Papers* (2.309-82). In order to obtain a more comprehensive idea of Peirce's conceptions in this regard, a reading of the above chapter should be combined with a study of other passages in the said *Collected Papers*, in manuscripts or in other editions of Peirce's works referred to in the bibliography. The classic bibliographic reference on the development of Peirce's thought is Murphey (1961).

11) At times (e.g. CP 2.335, 3.435), Peirce seems to treat the copula as a third essential component of the proposition. This is not, however, his definitive view concerning the question (see CP 5.473).

12) It is worth noting that the examination of the nature and function of pronouns (demonstratives in particular) provides evidence for something more than a mere community of aims in Thomas of Erfurt's and Peirce's conception of speculative grammar. Departing considerably from the traditional definitions given by Priscian and Dionysius Thrax, Thomas defined the pronoun as "pars orationis significans per modum entis et indeterminatae apprensionis" (Bursill-Hall 1972: 198) and described the demonstrative pronoun as something which "significat rem sub ratione vel proprietate presentiae seu notitiae primae" (Bursill-Hall 1972: 200).

13) This study does not aim at an examination of the forerunners of the Peircean conception of the proposition, or the influences affecting Peirce in this regard. Among others, two sources would appear to have particular relevance: the medieval theory of *significatio* and *suppositio* and John Stuart Mill's (1806-73) conception of the nature and meaning of the proposition.

14) According to Baker & Hacker (1984: 147 n. 15), Peirce none the less followed in the late-nineteenth-century trend which aimed at extending the use of the concept of function to non-mathematical contexts (see, for example, CP 3.610 ff.). As for the chemical metaphor, Peirce is both direct and explicit: "A rhema is somewhat closely analogous to a chemical atom or radicle with unsaturated bonds" (CP 3.420).

15) Briefly, a dicisign is a two-part sign, capable of conveying information, which represents itself to be a sign of its (primary) object. A portrait accompanied by a name, a map with a legend are typical dicisigns, whereas "a proposition is, in short, a Dicisign that is a Symbol" (CP 2.320). The necessary presence of the iconic element in the proposition and Peirce's reference to the notion of *Abbildung* (CP 3.609) allows us to make an analogy, in some respects, between his conception of the proposition and the *picture theory* advanced in Ludwig Wittgenstein's (1889-1951) *Tractatus* (see Chauviré 1979).

16) Peirce, albeit intermittently, adopts the terms "hypoicon" and "subindex" to emphasize that, within the linguistic proposition, certain signs, altough symbols, principally function by virtue of their respective iconic and indexical aspects (see, for example, CP 2.276-84, 4.47). In this work, I have assumed a foreknowledge of the general Peircean distinction between icon, index and symbol.

17) In this case too, Peirce complains: "Grammarians call [them] by the very indefinite designation of *indefinite* pronouns" (CP 2.288).

18) Information is a third "quantity" added by Peirce, alongside breadth and depth, in order to avoid the incoherences arising form the traditional theory of inverse proportionality between intension and extension of terms (see CP 2.391-430).

19) This generalized theory of the breadth-depth relationship links up with the generalized doctrine of "illation", which permits Peirce an analogous treatment of subject, antecedent and premiss, on the one hand, and predicate, consequent and conclusion, on the other. I will return to this matter further on.

20) Cf. the interesting analysis performed by Short (1984).

21) Brock (1981b) draws a comparison between Peirce's and Searle's viewpoints regarding the act of assertion. It should be noted that assertion is not the only speech act to be

examined by Peirce, although it is the only one he analyses rather thoroughly. In fact, between the end of the nineteenth century and the beginning of the twentieth, a certain degree of interest was spreading for various types of social and linguistic acts: worthy of particular attention are the works of Husserl (see Pietersma 1985) and the authors adherring to the Brentanian and Husserlian schools, such as Anton Marty (see Parret 1976) and Adolf Reinach (1883-1917) (see Smith 1982). Frege too in his *Logische Untersuchungen*, extends the sense-force distinction to cover not only assertoric, but also interrogative sentences, while formerly (in his *Begriffsschrift*) he limited himself to emphasizing that the assertoric force belongs to neither the predicate nor the copula of a sentence.

22) There is a wealth of bibliographical references on this point: for the sake of brevity, I refer the reader only to Prior (1976).

23) Brock (1981a) and Hilpinen (1982) both lay considerable emphasis on this point. See also Chapter IV of the very recent Hookway (1985).

24) In fact, Peirce often collocates the natural language proper name, together with demonstrative and personal pronouns, among the subindexes, considering them to have no connotative function (see, for example, CP 2.328-29; 3.460).

25) By repeatedly applying the operation of hypostatic abstraction, we can obtain what appears to be the most logically thorough among the various forms of logical proposition analysis, i.e. the one in which, in Peirce's words, "we throw into the subject everything that can be removed from the predicate" (SS: 71).

26) Peirce often treats indeterminate or vague individuals as second-intentional expressions, i.e. terms referring to individuals through the mediation of first-intentional indexical words. As for Peirce's sources, he makes no reference to any particular author, but rather to ancient logical doctrines: Aquinas and Duns Scotus could be among the sources referred to. The doctrine of the indeterminate individual, applied to concepts, is resumed by Leibniz (Lenzen 1984). A somewhat similar conception can be found in Russell (1903: ch. V), where expressions like "some man" are considered to be phrases denoting "ambiguous" individuals, an idea subsequently abandoned by Russell (1905). In this study, I do not go into Peirce's problematic conception of the nature of the individual: the literature on Peirce offers a wide variety of interpretations regarding this question (see, among others, Martin (1976) and Michael (1972)).

27) Geach (1968) has written a comparative study of the medieval and Fregean analyses of quantifier phrases which tends, above all, to highlight the defects of the former, compared to the latter; for a different view, cf. Henry (1972).

28) The symbolic notation referred to here is the one Peirce adopts in his general algebra of logic. As mentioned at the beginning of this study, Peirce maintains that, as things stand, an adequate regimentation of the structural features of natural language can only be achieved by using the artifical language of logicians. However, he draws attention to the fact that formalized languages have peculiar characters: for example, in exact logic, signs refer to ideally determinate individuals, thus excluding any kind of collateral experience and reducing to a minimum the assumed state of information. We must also remember that, in his search for the best method of symbolic representation of the proposition, Peirce ends up by favouring his own system of existential graphs, considered more suitable, in terms of iconicity and simplicity, for the diagrammatical presentation of proposition components and inference structure. Being, however, a symbolism of limited circulation, it will not be taken into examination in this study, not only for the sake of brevity, but also because Peirce's adoption of the system involved no important modification of either his general conception or his proposition analysis. For more on the graph theory, I refer the reader to Roberts (1973).

29) Hintikka (1976) is not the only one to move away from the orthodox method of quantifier analysis, towards a position similar to the one held by Peirce; among others, I

would bring the reader's attention to Montague (1974) who provided a unified treatment of proper names and quantifier phrases.

30) In fact, it is difficult to establish a parallel between J. Hintikka's notion and the Peircean idea of truth *qua* opinion agreed in the long run by the scientific community. However, the interpretation of Peirce's conception of truth, not discussed here, is a much-debated issue (see Almeder 1985).

31) See Dipert (1981) for a more detailed analysis of the development of Peirce's views on the relationship between categorical and hypothetical propositions.

32) R. Dipert admits that in long passages of one of his most important essays ("On the Algebra of Logic: A Contribution to the Philosophy of Notation", CP 3.365-90), Peirce intends, above all, an application of the calculus to propositional logic. What Dipert rejects in the Berry (1952) and Turquette (1964) interpretation is simply the total identification of the Peircean implication with the material conditional, of his icons with axioms and of the quantities v and f with the two values true and false. Even those commentators who, like Prior (1964) and Thibaud (1975), underline a certain affinity between Peirce's "ordinary" conditional and strict implication, on the one hand, and formal implication, on the other, tend to isolate Peirce's propositional calculus from the rest of his logic.

33) In order to re-enforce his thesis, Peirce sometimes considers, as possible correlates of occasions or situations, objects (such as trees or pebbles) co-existent with the truth of the proposition in question. In this way (rather strikingly), the hypothetical proposition "if Enoch and Elijah died, the Bible errs" could also be expressed in the following categorical form: "every pebble coexisting with Enoch and Elijah as dying men is coexistent with an error in the Bible" (MS 410: 9-10).*

REFERENCES

A. *Primary Sources*

CP = Peirce, Charles Sanders. 1931-35; 1958. *Collected Papers*. Vol. I-VI ed. by Charles Hartshorne & Paul Weiss. Cambridge (Mass): Harvard Univ. Press. Vol. VII-VIII ed. by Arthur W. Burks, *ibid*. (Cited as CP plus volume and paragraph numbers).

MS = ——. *The Charles S. Peirce Papers*. Microfilm edition, Harvard Univ. Library, n.d. (References to Peirce's manuscripts take the form MS followed by the numbering supplied by Robin (1967)).

CD = ——. 1889-91. (Entries in) *The Century Dictionary and Cyclopedia*. New York: The Company Century.

NE = ——. 1976. *The New Elements of Mathematics*. Ed. by Carolyn Eisele. 4 vols. The Hague: Mouton.

SS = ——. 1977. *Semiotic and Significs: The correspondence between Charles S. Peirce and Victoria Lady Welby*. Ed. by Charles Hardwick. Bloomington: Indiana Univ. Press.

B. *Secondary Sources*

Almeder, Robert. 1985. "Peirce's Thirteen Theories of Truth". *Transactions of the Charles S. Peirce Society* 21. 77-94.

Baker, G.P. & P.M.S. Hacker. 1984. *Frege: Logical excavations*. Oxford: Oxford Univ. Press.

Berry, George D.W. 1952. "Peirce's Contribution to the Logic of Statements and Quantifiers". Wiener & Young 1952. 153-65.

Brock, Jarrett E. 1975. "Peirce's Conception of Semiotic". *Semiotica* 14. 124-41.

——. 1981a. "An Introduction to Peirce's Theory of Speech Acts". *Transactions of the Charles S. Peirce Society* 17. 319-26.

——. 1981b. "Peirce and Searle on Assertion". Ketner et al. 1981. 281-87.

——. 1981c. "Peirce's Anticipation of Game-Theoretical Logic and Semantics". Herzfeld & Lenhart 1981. 55-64.

Bursill-Hall, Geoffrey L., ed. 1972. *Thomas of Erfurt. Grammatica Speculativa*. London: Longman.

Byrne, James. 1885. *General Principles of the Structure of Language*. 2 vols. London: Trübner & Co. (2nd ed., 1892: Kegan Paul & Co.).

Chauviré, Christiane. 1979. "Peirce, le langage et l'action: sur la théorie peircienne de l'assertion". *Etudes Philosophiques*. 3-17.

Delledalle, Gérard. 1979. *Théorie et pratique du signe: Introduction à la sémiotique de Charles S. Peirce*. Paris: Payot.

Dipert, Randall R. 1981. "Peirce's Propositional Logic". *Review of Metaphysics* 34. 569-95.

Geach, Peter T. 1968. *Reference and Generality: An examination of some medieval and modern theories*. Ithaca: Cornell Univ. Press.

Godfrey-Smith, William. 1976. "Names, Indices and Individuals". *Analysis* 37. 1-10.

Hacking, Ian. 1983. *Representing and Intervening: Introductory topics in the philosophy of science*. Cambridge: Cambridge Univ. Press.

Henry, Desmond P. 1972. *Medieval Logic and Metaphysics*. London: Hutchinson Univ. Library.

Herzfeld, Michael F. & Margot D. Lenhart, eds. 1981. *Semiotics 1980.* New York: Plenum.

Hilpinen, Risto. 1982. "On C.S. Peirce's Theory of the Proposition: Peirce as a precursor of game-theoretical semantics". *The Monist* 65. 182-88.

Hintikka, Jaakko. 1976. "Quantifiers in Logic and in Natural Languages". Körner 1976. 208-32.

Hookway, Christopher. 1985. *Peirce.* London: Routledge & Kegan Paul.

Jakobson Roman. 1980. *The Framework of Language.* Ann Arbor: Horace H. Rackham School of Graduate Studies.

Ketner, Kenneth L. et al., eds. 1981. *Proceedings of the C.S. Peirce Bicentennial International Congress.* Lubbock: Texas Tech Press.

Kloesel, Christian J.W. 1981. "Speculative Grammar: From Duns Scotus to Peirce". Ketner et al. 1981. 127-33.

Körner, Stefan, ed. 1976. *Philosophy of Logic.* Oxford: Basil Blackwell.

Lenzen, Wolfgang. 1984. "'Unbestimmte Begriffe' bei Leibniz". *Studia Leibnitiana* 16. 1-26.

Lizka, Jakob. 1981. "Peirce and Jakobson: Towards a structuralist reconstruction of Peirce". *Transactions of the Charles S. Peirce Society* 17. 41-61.

Lyons, John. 1977. *Semantics.* 2 vols. Cambridge: Cambridge Univ. Press.

Malmberg, Bertil. 1977. *Signes et symboles: les bases du langage humain.* Paris: Picard.

Martin, Richard M. 1976. "On Individuality and Quantification in Peirce's Published Logic Papers. 1867-1885". *Transactions of the Charles S. Peirce Society* 12. 231-45.

Michael, Emily. 1976. "Peirce on Individuals". *Transactions of the Charles S. Peirce Society* 12. 321-29.

Montague, Richard. 1974. *Formal Philosophy* ed. by Richmond Thomason. New Haven: Yale Univ. Press.

Moore, Edward C. & Richard S. Robin, eds. 1964. *Studies in the Philosophy of Charles S. Peirce (Second series).* Amherst: Univ. of Massachusetts Press.

Murphey, Murray G. 1961. *The Development of Peirce's Philosophy.* Cambridge, Mass: Harvard Univ. Press.

Pape, Helmut. 1982. "Peirce and Russell on Proper Names". *Transactions of the Chrles S. Peirce Society* 18. 339-48.

Parret, Herman, ed. 1976. *History of Linguistic Thought and Contemporary Linguistics.* Berlin-New York: Walter de Gruyter.

Pharies, David A. 1985. *Charles S. Peirce's and The Linguistic Sign.* Amsterdam & Philadelphia: John Benjamins.

Pietersma, H. 1985. "Assertion and Predication in Husserl". *Husserl Studies* 2. 75-95.

Prior, Arthur N. 1964. "The Algebra of the Copula". Moore & Robin 1964. 79-94.

——. 1976. *The Doctrine of Propositions and Terms*. Ed. by P.T. Geach & Antony J.P. Kenny. London: Duckworth.

Roberts, Dan D. 1973. *The Existential Graphs of Charles S. Peirce*. The Hague: Mouton.

Robin, Richard S. 1967. *Annotated Catalogue of the Papers of Charles S. Peirce*. Amherst: Univ. of Massachusetts Press.

Romeo, Luigi. 1979. "Charles S. Peirce in the History of Linguistics: An outline for research". *Ars Semeiotica* 2. 247-52.

Ross, Gregory A. 1976. *Grounds for Grammar*, Washington D.C.: Univ. Press of America.

Russell, Bertrand. 1903. *The Principles of Mathematics*. London: George Allen & Unwin.

——. 1905. "On Denoting". *Mind* 14. 479-93.

——. 1910-11. "Knowledge by Acquaintance and Knowledge by Description". *Proceedings of the Aristotelian Society* 11. 108-28.

Searle, John. 1970. *Speech Acts: An essay in the philosophy of language*. Cambridge: Cambridge Univ. Press.

Short, T.L. 1984. "Some Problems Concerning Peirce's Conceptions of Concepts and Propositions". *Transactions of the Charles S. Peirce Society* 20. 20-37.

Smith, Barry, ed. 1982. *Parts and Moments: Studies in logic and formal ontology*. München: Philosophia Verlag.

Thibaud, Pierre. 1975. *La logique de Charles Sanders Peirce: De l'algèbre aux graphes*. Aix en Provence: Editions de l'Univ. de Provence.

Turquette, Atwell. 1964. "Peirce's Icons for Deductive Logic". Moore & Robin 1964. 95-107.

Wiener, Philip & Frederic H. Young, eds. 1952. *Studies in the Philosophy of Charles Sanders Peirce*. Cambridge (Mass): Harvard Univ. Press.

THE LOGICS OF FREGE'S CONTEMPORARIES, OR *"DER VERDERBLICHE EINBRUCH DER PSYCHOLOGIE IN DIE LOGIK"*

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I.

The German mathematician and philosopher Gottlob Frege (1848-1925) is, according to the received view, both the father of analytic philosophy and the founder of mathematical logic. However, he almost certainly deserves a third award for having established anti-psychologism, if not as a doctrine, at least as a body of arguments and of instructions for detecting the symptoms of psychologism, instructions which we are well advised to follow if we are to avoid the many pitfalls of a dangerous doctrine. For psychologism wears various guises: it appears in wolf's clothing, e.g. in Sigwart (1873-78), Husserl (1891), Erdmann (1892), Lipps (1893), in sheep's clothing, e.g. in Wundt (1880-83), Lotze (1874), and as a slip of the pen in the writings of many mathematicians, even of those who, like Georg Cantor (1845-1918) and Richard Dedekind (1831-1916), are otherwise immune from committing the "genetic" fallacy of confusing the meaning and import of mathematical propositions with the real processes whereby we apprehend them. The favoured aim of psychologism is the blurring of distinctions — between laws of thinking and laws of thought, between the sense of linguistic expressions and that which they can be used to talk about (*"die Vorstellung"* and *"das Vorgestellte"* in the terminology of some psychologistic authors), between sense and subjective representation (sometimes distinguished in terms of *Vorstellung* (representation) vs. *Bild* (image) but more often conflated under the same label), between that which is overtly said and that which is merely suggested (*angedeutet*), implied (*mitgemeint*), or presupposed (*vorausgesetzt*). An especially apt characterization of psychologism is given by Frege in his posthumously published *Logik* of 1897:

Bei der psychologischen Auffassung der Logik fällt der Unterschied zwischen den

Gründen, die eine Überzeugung rechtfertigen, und den Ursachen, die sie wirklich
hervorbringen, weg. Eine eigentliche Rechtfertigung ist dann nicht möglich; an ihre
Stelle wird die Erzählung treten, wie die Überzeugung gewonnen wurde, aus der zu
entnehmen ist, dass alles seine psychologischen Ursachen gehabt hat. (Frege 1983
[1897]: 159.) [1]

Nowadays anti-psychologism is not in vogue. In part its interest has
simply faded away: logic has become an established discipline, and if it
runs any risks, psychologism is not among them. Besides, the antidote
prescribed by Frege himself may land us straight in a barren "third
realm" of thoughts (1967 [1918]: 360-61.) in comparison with which
even the jungle of mental representations, mental acts, mental states,
mental capacities, etc., of the psychologistic logicians might look appeal-
ing. Moreover, it is by no means obvious that Frege's own doctrines of
sense and (assertoric) force are unstained by psychologism, if "psycho-
logism" is construed in austere Fregean terms. But the most serious ob-
jection to Frege's views comes from certain quarters within the philos-
ophy of language, a discipline in which Frege's ideas have gained cur-
rency and importance thanks to the influential writings of Bertrand Rus-
sell (1872-1970), Ludwig Wittgenstein (1889-1951), and Rudolf Carnap
(1891-1970). This objection amounts to the following claim. A classical
theory of meaning for a natural language and the model-theoretic se-
mantics which goes with it cannot coexist with a psychologically realistic
model of the linguistic competence of an ideal speaker-hearer. Because
of their exclusive concentration on the theory of reference analytic phi-
losophers have lost sight of the other face of semantics, namely the the-
ory of sense, or, to use a more congenial terminology, they have failed
to give an account of the mental representations of propositional con-
tents. For too long, the objection continues, philosophy of language has
borrowed its key notions from logic (i.e. notions such as logical form,
truth, entailment); now it is time to return to, or rather advance to-
wards, a psychologically relevant treatment of that in which understand-
ing language really consists.

Plainly, a discussion of these and kindred issues would exceed the
scope of the present paper. I have mentioned them in order to hint at
some of the reasons why even the non-historically minded reader might
profit from rehearsing Frege's rebukes to the psychologistic logicians of
his day. In this way such a reader may even be encouraged to have a
look at those ponderous books to the actual neglect of which among
philosophers (but see Poggi 1977) Frege no doubt contributed a good
deal. I am not competent to judge whether in the cognitive sciences these
books have had a better fate. After all, the authors under consideration
are Wilhelm Wundt (1832-1920), the founder of modern experimental

psychology, Hermann Lotze (1817-81), whose *Medizinische Psychologie* (1852) surely deserves a place in the history of psychology, Theodor Lipps (1851-1914), Benno Erdmann (1851-1912), Theodor Ziehen (1862-1950), who all came to logic from the medical sciences. A different approach to logic is to be found in the works of the early Edmund Husserl (1859-1938), Alexius Meinong (1853-1920) and Alois Höfler (1853-1922), whose inspiration came from the Austrian school of "descriptive psychology" inaugurated by Franz Brentano's (1838-1917) *Psychologie vom empirischen Standpunkt* (1874).

The landscape of German (and Austrian) philosophy in the second half of the nineteenth century is extremely rich and varied. What makes those times particularly interesting from the point of view of the present paper is the way in which three disciplines — psychology, logic, and linguistics — that came of age at almost the same time claimed privileged access to the phenomenon of linguistic meaning. Many treatises which were called *Logic* or contained the word "logic" in their titles would, by modern standards, at most count as essays in the philosophy of logic. They dealt with assorted topics, such as language and perception, the acquisition of language, the formation of concepts and their linguistic representation, judgment and other mental activities, the status of the laws of thought, the phenomena of attention, memory, perceptual stimulation and their relations to the contents of sentences, etc. Linguists, philosophers, psychologists, and mathematicians all wrote logic books; there were "pure" (that is, impure) logics, "formal" logics, and "empirical" logics. The latter heading can be taken to comprise all those logic books which followed the model of John Stuart Mill's (1806-73) *System of Logic* (1843). The German translation by J. Schiel of its first edition appeared in 1849 (this is the translation from which both Frege and Wundt quote); its eighth and last edition of 1872 was translated by Theodor Gomperz and appeared in his edition of Mill's *Gesammelte Werke* in twelve volumes (1869-81). The influence of Mill's works on both German and Austrian philosophy can hardly be overestimated; for Sigwart (1830-1904), Brentano, and Wundt (to mention only a few) Mill's work was a source of profound insights; for others, e.g. Frege and Husserl, it was an object of critical confrontation. It was probably through Mill's writings that the works of James Mill (1773-1836), Alexander Bain (1818-1903), George Boole (1815-64) and William Stanley Jevons (1835-82) reached a large philosophical audience. Among mathematically trained logicians the works of Boole, Venn (1834-1923) and Jevons became known mainly through the writings of Ernst Schröder (1841-1902) and Robert Grassmann (1815-1901).[2] By far the best critical accounts of Boole's algebra of logic were given by Wundt (1880) and by

Frege in his posthumously published paper "Booles rechnende Logik und die Begriffsschrift" (1880-81) (cf. also Alois Riehl (1844-1924) 1877). Frege and Husserl dealt at length with Schröder's work, and in the context of that discussion the contrast between *Logiker des Inhalts* and *Logiker des Umfangs* came to the fore. Frege (1895) summed up the whole controversy in terms which seem to me the most satisfactory and penetrating. In this context mention must also be made of the German scientist and philosopher who in that period most luminously incarnated the ideal of interdisciplinary research; this was Hermann von Helmholtz (1821-94). His *Handbuch der physiologischen Optik* (1856-67) was an essential contribution to psychology, and his influential work on non-Euclidean geometries and the philosophy of arithmetic, made accessible to a general audience through his popular essays (Helmholtz 1971), contributed to creating a climate which was not really favourable to the new ideas developed in mathematics by Dedekind, Frege and, above all, Cantor.[3] Cantor and Frege concurred in their opinions of Helmholtz's work on number theory and, presumably, also in their opinions of Helmholtz's friend Kronecker (1823-91) as editor of *Crelles Journal für reine und angewandte Mathematik* (cf. Cantor (1932 [1887]: 383); Frege (1967 [1892]: 166; 1903, § 137)).

In a sense German science and philosophy suffered from an embarrassment of riches during the period under consideration; there simply were too many people having brilliant ideas and publishing them at the same time. This richness must be borne in mind by everyone who attempts to arrive at a clear conception of the problems then at issue. To take just one example: in order to understand what Lotze meant by *"Lokalzeichen"* or Helmholtz by *"Zeichen"* we have to look at their discussions of visual and spatial perception. An echo of these discussions lingers on in the nativism vs. empiricism controversy, but if we concentrate only on the purely philosophical statements of these authors we are likely to miss the point and the specific flavour of that debate.

Needless to say, neither now nor then did everyone agree on whether that richness was a positive feature. The Neo-Kantian Wilhelm Windelband (1848-1915) for example took a fairly dim view of that period and thought that both "psychologism" and "positivism" were offspring of an all too scientific interpretation of Otto Liebmann's (1840-1912) slogan *"Zurück zu Kant"* pronounced in his book *Kant und die Epigonen* (1865). Windelband writes:

> Die Erneuerung des Kantianismus hat aber das Geschick erfahren, daß sie zunächst durch die Interessen des naturwissenschaftlichen Denkens auf die Erkenntnistheorie eingeengt wurde: und deren ausgesprochen empiristische Zuspitzung führte auf der

einen Seite zu positivistischen Umbildungen, auf der andern Seite zur Auflösung der philosophischen Probleme in psychologische. So breitete sich, wie in der Zeit vor Kant, einige Jahrzehnte lang namentlich auf den deutschen Universitäten eine verderbliche Vorherrschaft des Psychologismus aus. (1980 [1892]: 539.) [4]

Even if one does not agree with Windelband's fondness for *Werttheorie* or, rather, for *Werttheorien* (cf. Schnädelbach 1983: 205 ff.), one may still see a grain of truth in his assessment of certain aspects of the Kantian heritage. Not so dissimilar is the judgment expressed by the mathematician Cantor, who complains about the dominant "Kantian" school of scepticism and positivism represented by Helmholtz [5] and Kronecker. In this context the only type of "infinite" which could be recognized was the infinite of analysis, which for Cantor was spurious, not a concept of infinity at all. Cantor objects to the Kantian claim that without sensibility no objects are given to us and says that this dogma makes it impossible for the creations of purely conceptual thinking to gain recognition and acceptance (for a similar argument, cf. Frege 1884: § 89). Thus Cantor's theory of transfinite order-types clashed with deeply ingrained prejudices of his time. The source of these prejudices was the philosophy of Kant, about which Cantor expressed a very harsh judgment in his criticism of Wundt's misunderstandings of his — Cantor's — theory of order-types:

> Die Begriffsschwankungen und die damit zusammenhängende Verwirrung, welche seit ungefähr *hundert* Jahren zuerst vom fernen Osten Deutschlands her in die Philosophie hineingetragen wurden, zeigen sich nirgends deutlicher als in den das *Unendliche* betreffenden Fragen, wie aus unzählig vielen, sei es *kritizistisch* oder *positivistisch*, *psychologistisch* oder *philologistisch* gehaltenen Publikationen unsrer heutigen philosophischen Literatur hervorgeht. (1932 [1885]: 376.) [6]

Clearly it will not be possible here to pursue in detail all the topics mentioned in the sketch given above. What I shall try to do is to convey an impression of some of those issues as they must have appeared to Frege. This will involve a preliminary look at the relevant philosophical works which Frege can be presumed to have read or regarding which he can be shown to have evinced some interest. An account will be given of what Frege meant by "psychologism", followed by a discussion of what Frege might have considered positive features of certain claims and arguments put forward by psychologistic authors.

II.

Whereas Frege forged and perfected in detail an impressive range of arguments against the "corrupting incursion of psychology into logic"

(Frege 1893: XIV), it was Husserl who in his *Prolegomena zur reinen Logik* (1900) drew the first accurate map of the spreading of the psychologistic epidemic in German philosophy during the second half of the nineteenth century. Frege's contribution is not sufficiently acknowledged in the *Prolegomena* (Husserl 1913: 169 n.); but it seems clear that most of Husserl's arguments against psychologism are borrowed from Frege, [7] the sharpness of whose criticisms Husserl himself had experienced (Frege 1894) and whose writings he knew well (cf. Gabriel 1976: 91).

From a "positivistic" point of view a detailed survey of German logical writings of the period covered by Husserl's *Prolegomena* was given by Theodor Ziehen in his *Lehrbuch* (1920). Ziehen taught psychiatry at Frege's University (Jena) from 1892 to 1900. Together with Richard Avenarius (1843-96) and Wilhelm Schuppe (1836-1913) he is referred to by Ernst Mach (1838-1916) as a philosopher with similar interests (Mach 1905: VII). Ziehen coined the word "Konzinnisten" (1920: 205) to characterize those philosophers who, like Sigwart, Wundt, Erdmann, Lipps, and to some extent himself, aimed at placing logic within the general framework of a theory of knowledge, also by drawing on the results of empirical psychology. In the *Lehrbuch* Frege is often quoted in appropriate contexts; Ziehen even endorses Frege's notion of "argument" (and function) and embellishes this notion by way of adducing psychological considerations (1920: 459 ff.).

From Husserl's *Prolegomena* and Ziehen's *Lehrbuch* we can cull a fairly accurate picture of the state of the art in Frege's days and of the philosophical climate Frege complains about in the preface to the first volume of his *Grundgesetze*. Frege's own writings, however, do not contain may clues to the philosophical contemporaries he has in mind. To be sure, in his *Grundlagen* (1884) many philosophers of the past are mentioned, but the only *contemporary* German philosopher named are Benno Erdmann and Kuno Fischer (1824-1907), whose *System der Logik und Metaphysik oder Wissenschaftslehre* (1852) is cited as an example of the "crudity" of the prevailing philosophical theories that prevented Frege's own work on the foundations of arithmetic from being duly recognized. An equally negative view of Kuno Fischer is expressed in Frege's posthumously published piece "Über den Begriff der Zahl" (1983: 93). This fact should be taken into account by those who conjecture that Kant's philosophy came to have a lasting influence on Frege through Kuno Fischer's teaching at the university of Jena (cf. Sluga 1984). It is by no means clear why it is supposed that there needed to be any *special* incentive for Frege to read Kant. At any rate, a more likely influence would have been Frege's friend and colleague Otto Liebmann (1840-1912), who taught in Jena from 1882; Liebmann's "critical realism" (cf. Thiel 1984:

611; Kreiser 1984; Gabriel 1986) may have been congenial to Frege.

In contrast with the paucity of references to contemporary philosophers, the writings of contemporary mathematicians are frequently mentioned in the *Grundlagen* and elsewhere, e.g. the works of Ernst Schröder, Hermann Hankel (1839-73), Robert Grassmann, Hermann Grassmann (1809-77), Karl Theodor Weierstraß (1815-97), Hermann von Helmholtz, Leopold Kronecker, Georg Cantor, H. Eduard Heine (1821-1882), Richard Dedekind, Johannes Thomae (1840-1921), David Hilbert (1862-1943), to mention just a few of the better known ones. Frege also wrote reviews of works by the Neo-Kantians Hermann Cohen (1842-1918) and Friedrich Albert Lange (1828-75); while Cohen's work *Das Prinzip der Infinitesimal-Methode und seine Geschichte* (1883) is severely criticized in Frege's review (1885), the article on Lange's *Die geschichtliche Entwicklung des Bewegungsbegriffs* (1886) is altogether positive (1891).[8]

The philosopher who, besides Husserl, was singled out by Frege as one of the real offenders was Benno Erdmann. Erdmann, the first (and last) volume of whose *Logik* appeared in 1892, was also the author of a book on the axioms of geometry and of a study of Kant. In many respects he was a rather traditional philosopher. The account of predication he endorses comes from William Hamilton (1788-1856), he heavily draws on the Aristotelian doctrine of categories and predicables, and, predictably, he reveals himself to be a *Logiker des Inhalts*. Moreover, he was unsympathetic to formal treatments of logic. Although in his *Logik* he does refer to Frege's *Grundlagen*, he gives the wrong year of publication (1888 instead of 1884); but surely this oversight (Erdmann 1892: 108) cannot have been Frege's reason for his hostility towards Erdmann.

In 1969 and 1976 conjectures and speculations as to what Frege might have read (but probably did not) were given a firmer basis. In 1969 the first edition of the surviving papers from Frege's scientific *Nachlaß* was published, and in 1976 a list of the entire original *Nachlaß* prepared by Heinrich Scholz (1884-1956) appeared in print (Veraart 1976). This list contains a number of interesting clues, which for all I know have been ignored by those who have written on Frege. It is a curious fact that, instead of paying close attention to that list, Frege scholars have speculated about Lotze's possible influence on Frege (cf. Sluga 1980, Dummett 1982) and, more recently, about Frege's indebtedness to Kant. Already in 1966 Günther Patzig had expressed his conviction that much in Frege's philosophy comes from Kant (Patzig 1966: 15). In the absence of a detailed analysis to back this type of claim such attributions of influence are either trivial or highly controversial. To make the reader vividly aware of the conceptual tangle involved it will suffice to mention one fact. In 1879 two masterpieces were published:

Frege's *Begriffsschrift* and Helmholtz's rectorial address "Die Tatsachen in der Wahrnehmung". Both Frege and Helmholtz set out to undermine two pillars of Kant's doctrine, and they did so from opposite ends. Against Kant's claim that the propositions of arithmetic are synthetic *a priori* Frege wanted to show that they are analytic by pointing out that no appeal to any *a priori* intuition of time was needed to grasp the concept of following in a sequence for example. Helmholtz wanted to demonstrate that Kant had attributed too rich and too specific a content to the intuition of space; rejecting Kant's principles he argued that the *axioms* of geometry are synthetic and can be known only *a posteriori*, even though the pure intuition of space (as Helmholtz was still prepared to concede) might be *a priori*. Helmholtz explicitly conceived of himself as improving on the Kantian doctrine and thus, in a sense, as a "Kantian". Frege, on the other hand, saw very clearly that his views on logic and arithmetic were irreconcilable with Kant's theory and, besides, he heartily disagreed with Helmholtz's views on arithmetic and geometry. And I am sure that Frege's lamentably retrograde views on geometry were not due to his alleged adherence to Kantian dogmas.[9] Now, if either (or both) of these thinkers, who contributed like few others to dismantling Kant's conception of knowledge, are to be called "Kantians", then surely each was a "*Kantianer eigener Art*" (cf. Weyl 1966, Teil II § 18).

It will be better not to follow the *Prinzip der Nichtunterscheidung des Verschiedenen*, which Frege exposed as one of the mainsprings of confusion (Frege 1967 [1899]: 241 and passim), but rather to try to find out what it is that makes an author himself and not another author. For this reason we shall return to Scholz's list. The grouping and sorting out of the various items in his copious *Nachlaß* had been attended to by Frege himself. What Scholz contributed was some further ordering of those items, their numbering, and the description of some of the pieces. A feature of this list which is interesting from the present point of view is that there are a number of mentions of philosophers from whose writings Frege had taken notes. Part of this material was evidently used for articles and books Frege wrote and in many cases managed to publish; thus it is not surprising to find references to Leibniz, Spinoza, Herbart, Mill, and Erdmann. More interesting are the references to the *Logiken* of Wundt and Schuppe as well as a notebook bearing Frege's title "Logik von Dr. Christoph Sigwart", which seems to have contained 19 pages of notes on, or extracts from, that work (Veraart 1976: 103). Another interesting mention is that of Friedrich Ueberweg (1826-71) (Veraart 1976: 96). On the basis of these references one may then speculate whether Frege's reading of Schuppe's *Logik* for instance was occasioned by his

reading of Husserl's *Philosophie der Arithmetik*, where the views Frege had put forward in his *Grundlagen* (1884) are discussed and compared with those of Schuppe and Herbart (Husserl 1970: 161 ff.), or whether his perusal of Ueberweg was due to a remark in Cantor's review of *Grundlagen*, where Frege's notion of the *Umfang* of a concept is treated as a residue of scholasticism possibly picked up from Ueberweg's *System der Logik* (Cantor 1932: 440).

As far as Sigwart is concerned, things are at the same time less mysterious and more intriguing. They are less mysterious because Sigwart's *Logik* was by far the best known among the "psychologistic logics" of those days. Ziehen (1920: 206) describes it as "eines der wichtigsten Werke der gesamten logischen Literatur" ("one of the most important works of the entire logical literature"). Cantor (1932: 206) calls it an "ausgezeichnetes Werk" ("an excellent work"), and Husserl speaks of Sigwart's "bedeutendes Werk, das wie kein zweites die logische Bewegung der letzten Jahrzehnte in die Bahn des Psychologismus gebracht hat" [10] (1913: 125). According to Husserl, Sigwart's kind of psychologism is a form of "anthropologism". Together with J.S. Mill, Alexander Bain, Wilhelm Wundt, Benno Erdmann, and Theodor Lipps he is declared guilty of what Husserl calls "skeptischer Relativismus", a hopelessly vague label which seems to fit virtually all empiricists, who, in the tendentious words of Windelband approvingly quoted by Husserl (1913: 84 n.), attempt "durch eine empirische Theorie dasjenige zu begründen, was selbst die Voraussetzung jeder Theorie bildet". [11] And Heinrich Maier (1867-1933), who wrote the introduction to the fourth edition of Sigwart's *Logik*, sees the latter's efforts as part of a Neo-Kantian "renaissance" (1921: IX). Both Husserl's and Maier's judgments will have to be qualified because Sigwart severely criticized, not only Mill's views on the significance of deduction, but also Kant's distinction between the synthetic and the analytic, his classification of judgments, and his account of the rôle of intuition in the understanding of numerical statements. Sigwart acknowledges as important influences on himself Mill, Adolf Trendelenburg (1802-72), and Ueberweg (1889: VI). The second edition of his *Logik* (1889-93) was translated into English in 1895 and thus found followers and admirers in thinkers as diverse as William James (1842-1910, cf. Zweig 1969: 441) and William Ernest Johnson (1858-1931) (cf. Johnson 1921: 198 ff.).

What is intriguing with respect to Sigwart is that, although there is much in his *Logik* that Frege would have disagreed with, there is a good deal that he might have found interesting. Above all, Sigwart always shows himself to be an acute thinker, and even in his arguments against the principle of excluded middle he does not display the facile psychol-

ogism of Erdmann's discussion of the possibility that different people accept different logical laws, which is then used to draw the conclusion that also the laws of logic may evolve (Erdmann 1892: 385 ff.). These arguments and claims of Erdmann's are explicitly discussed and rejected in Frege's preface to the first volume of *Grundgesetze* (1893: XIV-XXV). Although this does not really speak in favour of Resnik's (1980: 50) claim that Frege's non-specific attacks on psychologism are directed at Sigwart, the fact that Frege did study Sigwart's work (incidentally a fact which Resnik fails to mention) might support his thesis to a higher degree than the lack of evidence for Frege's having made a close study of Lotze's *Logik*, together with the hypothesis that during his student days at Göttingen (1871-73) he did *not* attend Lotze's lectures on logic but only those on the philosophy of religion, could possibly support Sluga's claim that Frege was profoundly influenced by Lotze (Sluga 1984, cf. Bynum 1972). [12]

We shall come back to Sigwart's logic in section IV. However, perhaps the most interesting references to a psychologistic logician in Frege's *Nachlaß* are those to Wundt's *Logik* both in his long article "Booles rechnende Logik und die Begriffsschrift" (1880-81) — meant for publication but rejected by the editors of three journals to whom Frege had offered it — and in the fragment "Ausführungen über Sinn und Bedeutung" (1892-95). As Wundt was one of the major representatives of psychologistic logic, one might expect Frege's references to Wundt to be critical. But this is not at all the case; their tone is rather respectful. Frege sees certain analogies between Wundt's treatment of concept-words and his own account of the unsaturated and predicative character of concepts. Since Frege's notions of concepts and concept-words are far from uncontroversial, those references to Wundt clearly merit some comment. I shall go into this question, too, in section IV.

Naturally Frege's scientific *Nachlaß* and Scholz's list cannot answer all the relevant questions arising from reading Frege's works with our present set of problems in mind. Here I wish to mention just one of the several questions that are bound to go unanswered. One may reasonably wonder whether Frege was acquainted with any of Brentano's works. Plainly he must have heard of Brentano, for not only did he review Husserl's *Philosophie der Arithmetik*, which is dedicated to Brentano, but he also corresponded with Carl Stumpf (1848-1936) and/or Anton Marty (1847-1914), who had both of them been pupils first of Brentano and then of Lotze. Thus one may ask whether Frege's terminology of *Anerkennung* and *Verwerfung*, which he uses from 1891 onward, or the term "Vorstellungsverbindung" (Frege 1879: 2) is in any way due to Brentano, who uses these very terms to designate the acceptance as true,

or the rejection as false, of possible contents of judgments. While for Brentano and Marty acceptance and rejection constitute two different types of *act*, for Frege there is no such difference, as he regards negation as part of the content of a thought (cf. Marty 1884; Angelelli 1967: 152 ff.; Gabriel in Frege 1976: 162).

This terminology of *Anerkennung* and *Verwerfung* occurs also in Windelband. [13] Moreover, Gabriel has recently (1984) suggested that Frege's use of the word "*Wahrheitswert*" may in some way be seen as reminiscent of Windelband, whose philosophical standpoint is classified by Ziehen (1920: 188 ff.) as *werttheoretischer Logizismus*. It is difficult to decide whether the possibility of any "influence" coming from Windelband is more or less likely than Frege's being influenced by Brentano. My impression is that the relevant values in Frege are those that a function takes for a given argument and have nothing to do with anything specifically Windelbandian. In order to emphasize the functional character of concepts Frege used a technical term directly reminiscent of *mathematical* talk about functions; and this way of looking at the matter is consonant with Frege's repeated claim of having enlarged the extension of the notion of a function (Frege 1879 § 10; 1967 [1891]: 131 ff.).

III.

In the preface to the *Begriffsschrift* Frege says that what he has accomplished by constructing a "formula language of pure thought" should be of interest to philosophers, at least in so far as it is recognized as one of the tasks of philosophy to break the power of words over the human mind by freeing thought from that which attaches to it solely because of the nature of our linguistic means of expression (1879: VI f.).

That there is an intrinsic relation between thought and language was a commonplace both for Frege and his psychologistic contemporaries. Thus Wundt wonders how it could have been possible for a mind to be mature enough to invent language without already possessing it; and he argues that the only psychologically conceivable answer is that thinking and language evolved simultaneously, which means that, even though in a developed language a word is nothing but a *Gedankenmünze*, the psychological process of concept formation must have left traces in our language (1880: 44). In a similar vein Helmholtz points out that, although a child learns the meanings of linguistic expressions only by means of being confronted with actual examples of the employment of those expressions, the representations associated with them will not form part of their meanings; at most, they will leave traces which play a certain rôle

in "unconscious inferences" (1971: 266 f.).

However, it is not the genetic aspect of the relation between thought and language which attracts Frege's attention; his attitude towards natural language is critical. He observes that, among the many purposes language can be used to serve, logical perfection is not paramount. The logical relations between concepts are hidden and it is difficult to grasp the patterns of argument really underlying our transitions from one thought to another. Thus, according to Frege, if we are to uncover logical form we must not follow too closely the outline of the dress which clads our thoughts. This "dress" is the grammatical (in contrast with the logical) structure of historically grown languages; it is through grammar that psychology exerts its power and influences and distorts our understanding of the thoughts imperfectly expressed by natural language. Even the employment of a given system of signs or an artificial notation will entail a mixing of intuitive and purely conceptual elements. Plainly, if a *logical* critique of language is to be feasible by *linguistic* means or by resorting to an artificial notation, thinking and speaking must not be identified: otherwise there would be no way of pulling ourselves out of that particular predicament by our own bootstraps.

Analysis is possible only if language itself provides us with a means of overcoming the psychological conditioning we are exposed to through the use of linguistic symbols (*Zeichen*). In 1882 Frege says, "Die Zeichen sind für das Denken von derselben Bedeutung wie für die Schifffahrt die Erfindùng, den Wind zu gebrauchen, um gegen den Wind zu segeln" (1882: 49). [14] Without symbols there would be no such thing as conceptual thinking. By using the same symbol to express what several similar things have in common we do not designate individual objects but that which is common to them, viz. a concept. As concepts are not perceivable by our senses, it is only by way of designating them by symbols that they can become accessible to us. Thus we can move by sensible means to the world of what is not sensible (1882: 50). Just as we can refer to individual objects by means of what Frege calls their proper names, so we can designate concepts by another type of words; but natural language tends to blur the distinction between concept-words and singular terms. Thus the expression "horse" can be used to designate both an individual and a species, as e.g. in the sentence "The horse is an herbivorous animal"; but it can also be used to designate a concept, e.g. in "This is a horse". According to Frege the peculiar nature of concept-words and names of abstract entities had eluded philosophers and logicians; for this reason they had been led to talk about the *representations* standardly or occasionally evoked by the occurrence of certain words while ignoring questions about their meaning and reference.

But if the semantic rôle of words consisted just in their evoking certain representations or images, no account could be given of their different logical functions as components of different sentences.

Much later, after the discovery of the antinomies, Frege reached the conclusion that even an artifical notation will not sufficiently protect us from our tendency to let the linguistic clothing of thought mislead us. This, however, is no reason to despair, Frege claims; but we shall have to admit that thought transcends language and must to some extent be ineffable (1983 [1924-25]: 288 f.). Certain fundamental notions, such as "truth", "function", "identity" can only be alluded to, never defined. And yet, we seem to grasp these notions. Without linguistic symbols, however, we should surely never have been in a position to consider them.

To reflect upon thought in abstraction from the linguistic means of articulating and expressing it may pave the way for undesirable conclusions. Consider for example the special twist the metaphor of language as the clothes of thought is given by the arch-psychologist, the early Theodor Lipps (1893: VIII):

> Lernt man ja doch auch nicht den Bau des menschlichen Körpers aus der Betrachtung des bekleideten Körpers kennen; vielmehr weiß jedermann, daß umgekehrt die Formen und Faltungen der Gewandung erst aus der Kenntnis des Körpers verständlich werden können. [15]

From this Lipps, unlike Frege, draws the conclusion that, thinking being a matter of mental acts, an investigation of its forms and laws must be a psychological investigation: "... daß die Logik eine Sonderdisziplin der Psychologie ist, unterscheidet beide genügend deutlich voneinander" (1893: 2). [16] But logic, in contrast with psychology, is a normative science; its task is not only to prescribe how to think soundly but also to indicate how this aim can be reached in practice, given our specific mental equipment. According to Lipps thinking is an "objektiv bedingtes Vorstellen" (1893: 4), and objectivity is that which characterizes logic. Objectivity, however, is regarded as being based on subjective certainty, which gives us access to the "necessary order of objects". Thus for Lipps truth comes to rest on subjective certainty, a view evidently at odds with Frege's views.

According to Frege's account, logic has little to do with any *mental* process of thinking; nor can thoughts be gathered from such processes, as rules of grammar can in Frege's opinion be read off from speech. Consequently it is better to avoid the word "*Denkgesetze*" (Frege 1983 [1897]: 157) and more appropriate to speak of "logical truths" or "logical propositions". Frege did not conceive of his formula-language as a

means of characterizing an idealized — let alone an actual — inferential *process*. To be sure, the logical "laws" employed in a deduction may be regarded as standards that we have to conform to if we wish to think soundly, that is, if we wish to infer true propositions from true propositions. But Frege never made any claims about possible uses of his *Begriffsschrift* as a *Kunstlehre* or a technique of reasoning, while among his psychologistic contemporaries there was an animated discussion of the issue of *Normalgesetze* (i.e. ideal laws) vs. psychological laws of thinking.

But here a problem will remain: even if thoughts may be regarded as language-transcendent Platonic entities, the grasping of thoughts, the judging of thoughts, and the presenting of thoughts as holding good are mental *acts* occurring in time and performed by actual people. But the logical relations between concepts constituting thoughts cannot be understood in terms of the psychological laws of association, complication, and agglutination of representations. Frege argues that even for psychological reasons the process of *grasping a thought* cannot be explained by pointing to a mere reshuffling of representations; nor can allusions to representations throw light on the unity of thought or the nature of the building blocks constituting thought. In the *Logik* of 1897 Frege points out that the special problems concerning the notion of grasping a thought are due to the fact that grasping a thought is a process

> ... der schon an der Grenze des Seelischen liegt und der deshalb vom rein psychologischen Standpunkte aus nicht vollkommen wird verstanden werden Können, weil etwas wesentlich dabei in Betracht kommt, was nicht mehr im eigentlichen Sinne seelisch ist: der Gedanke; und vielleicht ist *dieser Vorgang der geheimnisvollste von allen* (1983 [1897]: 157, my emphasis). [17]

And on the same page Frege adds the following footnote:

> Diese Frage ist in ihrer Schwierigkeit wohl noch kaum erfaßt. Meistens begnügt man sich wohl damit, das Denken durch eine Hintertür in das Vorstellen einzuschmuggeln, so daß man selbst nicht weiß, wie es eigentlich hineingekommen ist. [18]

Historically this footnote is not entirely true to the facts: Brentano had stressed that judging (a prime example of the act of thinking) is an act *sui generis* and quite different from simple representational acts. Wundt had re-invented the notion of synthetic apperception in order to account for the spontaneity of the act of thinking. And especially William James' chapter on "The Stream of Thought" in the first volume of his *Principles of Psychology* (1890) — where he spells out the difficulties of telling what the unity of thought resides in and what the components of a thought can be supposed to be — would have been a challenge to Frege, had he known it. Whatever the faults of the psychologistic logicians

with respect to this particular set of problems, Frege cannot be said to have done more than point out some of those faults and thereby indicated an important philosophical difficulty; his own notion of a "third realm" of thoughts, however, surely was not a promising step towards its solution.

There is yet another way of describing the relation between logic and psychology criticized by Frege. This does not concern the examination of psychological processes in order to find out whether they are at the basis of what is accepted as true for reasons of logic; rather it concerns the rules with which our thoughts have to accord in order to achieve objective validity. In Frege's opinion all investigations aimed at establishing whether certain psychological laws of thinking are in harmony with objective laws of thought are doomed to remain sterile or, at best, misleading (1983 [1897]: 158). The claim Frege is objecting to in this context may be attributed to both Wundt and Sigwart. According to them logic is more akin to *ethics* than to physics; it is a normative science prescribing how to think if one wishes to think correctly. And up to a point Frege agrees to this idea (expressed by Herbart, Sigwart, Wundt, and others) of comparing logic to ethics. "True" expresses the objective of logic in a way similar to that in which "good" expresses the aim of ethics (1983 [1879/1891]: 4, 139). The parallel is not perfect, however, because our normal use of the word "true" can be misleading, as Frege points out, in suggesting that basically it is an adjective, whereas in reality truth and falsity are objects: truth is what all true sentences refer to, falsity is what all false sentences refer to. What really characterizes logic is *assertoric force*, i.e. the expression of our striving towards truth, which has no counterpart in any particular part of speech, let alone in the adjective "true" (Frege 1983 [1915]: 271).

Still, in spite of using the parallel between logic and ethics of which the psychologistic logicians were so fond, Frege soon parts company with Wundt and Sigwart. Frege thinks that the primary task of logic is that of rendering explicit the laws holding in the realm of thought; whether there can be any justification of these laws in terms of psychological evidence or conditions of the possibility of apprehending them is of merely marginal interest. To mention a simple example: to grasp a sentence containing one or more expressions of negation is, as a matter of psychological fact, more difficult than grasping sentences without negation. *This* fact, however, can cast no doubt on, for instance, the validity of the principle of double negation. Even though the usual textbook treatment of that law may fail to do justice to our normal way of reasoning in accordance with it — e.g. for the reason that in ordinary language negation is rarely used in the sense of *propositional* negation

— possible questions as to its validity do not concern our empirical dif-
ficulties of applying it. Relevant questions that can be asked in this con-
text concern its independence or its being derivable from, say, the prin-
ciple of non-contradiction together with the principle of excluded middle.
Such questions concerning the dependence of one logical law on others
can be raised and are recognized by Frege as genuine logical problems.
In an important passage of *Grundgesetze* (1893: XVII) Frege writes:

> Die Frage nun, warum und mit welchem Rechte wir ein logisches Gesetz als wahr
> anerkennen, kann die Logik nur dadurch beantworten, daß sie es auf andere logi-
> sche Gesetze zurückführt. Wo das nicht möglich ist, muß sie die Antwort schuldig
> bleiben. [19]

It is precisely at this point that Frege parts company with Sigwart,
Wundt, and the later Husserl: their appeals to a logical feeling of necess-
ity, to acts of evident judgment accompanying the acceptance of logical
axioms can at best be seen as ways of describing the symptoms of fulfil-
ment which accompany subjective conviction and subjective certainty.
The fact that we cannot "imagine" people who do not experience the
logical inexorability of the principle of identity does not render this prin-
ciple any truer or firmer than it actually is; in a sense, we *can* imagine
such people, Frege argues, only we could not understand them; it would
be like being confronted with a new form of madness (1893: XVI).

As has been said at the beginning of this paper, psychologism is aptly
characterized by Frege as residing in the confusion of subjective entitle-
ment to holding a sentence true with an objective justification referring
to the grounds on which its truth may rest, no matter whether we shall
ever be in a position to grasp the thought expressed by it, let alone re-
cognize it as true. To spell out what Frege meant by "the objective justi-
fication" of a proposition would involve a discussion of his founda-
tional programme for arithmetic, and, more specifically, of the issues of
reductionism and the logicist conception of definitions, but that would
obviously exceed the scope of the present paper.

One may wonder whether Frege's anti-psychologistic stand-point has
any relevance or application outside the limited province of logic. In my
opinion the answer is yes; but here I can only mention, not argue for,
Frege's *Grundgedanke* which, as it were, licences the transition from
anti-psychologism in logic to anti-psychologism in the theory of mean-
ing. According to Frege, mathematical propositions, like ordinary de-
clarative sentences, have sense, they express thoughts. In order to give
an account of what "grasping the sense" of a sentence consists in, we
have to clear the ground of all those ingredients of meaning which are
of merely psychological or conversational significance and isolate those

features which are relevant to the thought *qua* truth-bearer. In order to render explicit the import and significance of a sentence we need not allow for our way of certifying it as true or the representations that happen to cross our minds when we utter a sentence with the force of an assertion; what we have to take into account is that which makes the sentence true. Thus the notion of truth becomes of central importance to an account of meaning in general and provides a link between logical and linguistic considerations.

<div align="center">IV.</div>

Readers of Frege's *Grundlagen* may have puzzled over the origins of the notion of *Wiedererkennungsurteil* to which he alludes in §§ 62-68; such judgements are said to be judgements whose sense has to be elucidated — and if possible sharpened by means of a definition — if our use of number words as names of abstract objects is to count as legitimate. Such judgements of recognition are preparatory to statements of identity or their denials. According to Frege identity is a decidable relation in which only objects can stand; judgements of recognition on the other hand make sense also with reference to concepts — cf. the example given in Frege (1882), where "This is a horse" serves to "present" a concept — and even with reference to thoughts (cf. Veraart 1970: 100, "Wiedererkennung des Gedankens").

In *Grundlagen* Frege deals with problems concerning the sense of statements expressing judgments of recognition regarding abstract objects such as numbers, shapes, colours, directions. Of course, we cannot enter into the details of Frege's account of contextual and explicit definitions as ways of fixing the reference of number words; what is of interest from the point of view of the present discussion is that in this context too Frege was fighting his anti-psychologistic battle: his slogan "Only in the context of a sentence does a word have a meaning" was primarily coined in order to defend the claim that from the absence of a concrete object of reference for number words we must not jump to the conclusion that we are dealing with representations or mental images.

Frege's celebrated distinction between *Sinn* and *Bedeutung* was part of his answer to the question where the cognitive value (*Erkenntniswert*) of identity statements resides and this is the context where the notion of the sense of a proper name is introduced. Now, it is in order to clarify what Frege meant by the sense of a proper name that we need to refer to the discussion of judgements of recognition. From this discussion we learn that a full grasp of the sense of a proper name, e.g. "3" or "Ve-

nus'', entails, among other things, possession of a criterion (*Kennzeichen*) by means of which the truth value of identity statements containing such proper names can in principle be decided (cf. Dummett 1973).

It is not to be excluded that as regards his understanding of those notions Frege was indebted to Sigwart for his account of simple judgments and, in particular, his characterization of *erzählende Benennungsurteile*, or narrative judgements of naming. Here it is important to distinguish subjective and perhaps idiosyncratic criteria which happen to enable us to identify, e.g. persons, melodies, and places, from objective criteria of the identity of persons, melodies, and places. The latter, difficult as they are to spell out, form part of our concepts of a person, a place, a melody. Now, the accounts of the mechanism whereby we recognize a face, a tune, a *Gestalt*, a shade of colour, etc. were at that time becoming an object of intense study on the part of physiologists and psychologists. Here it will suffice to mention the work of Helmholtz, Stumpf, Meinong, and the Austrian school of *Gestalt* psychology. Their studies were read by psychologistic logicians like Erdmann, Ziehen, and, of course, Wundt. However, the first sustained philosophical discussion of issues related to these scientific questions is to be found in Sigwart's *Logik*.

According to Sigwart examples of judgements of recognition are ''This is Socrates'', ''This is snow'', and perhaps also utterances such as ''Fire'', which are expressions of the immediate recognition of physical events. The same form of words, e.g. ''This is snow'' or ''This is the *Kölner Dom*'', can be used *both* in situations of ostensive teaching *and* on occasions where we express our recognition of an object as the bearer of a proper name which is, so to speak, already in our repertoire. Although in both situations we are presented with perceptually given objects, only the second type of judgement deserves the name ''recognition judgement''; the first type is more appropriately called *''Benennungsurteil''*. These judgements of recognition and naming belong to Sigwart's *simple judgements*, which according to him are the starting-point of all our knowledge (1889: 61).

Simple judgements are divided into narrative and explanatory judgements; the first always imply a reference to an existing individual picked out by means of a demonstrative pronoun possibly accompanied by an ostensive gesture; the latter serve to elucidate the meanings of words and thus say nothing about individual objects. Sigwart explains his choice of terminology thus:

> Ich wähle diesen Ausdruck, um eine gemeinschaftliche Bezeichnung für die Aussagen zu haben, welche sonst teils als Subsumtionsurteile (wo das Prädikat eine allgemeinere Vorstellung ist) teils als Identitätsurteile (wo das Prädikat dem Subjekt vollkommen kongruent ist) aufgeführt werden. Zwischen beiden besteht in den ein-

fachsten Fällen keine bestimmte Grenze; und der Vorgang, das Bewußtsein der Einheit des Gegebenen als Ganzen mit einer von früher bekannten Vorstellung, ist in beiden Fällen im wesentlichen derselbe. (1889: 69 n.) [20]

Of course, Frege would not have liked the psychologistic wording chosen by Sigwart. But Sigwart is calling attention to sentences of a type which express judgements not readily classifiable by the traditional scheme of subsumption of an individual under a concept or subordination of one concept under another. More to the point is the fact that these judgements of recognition are related to judgements of identity. After 1892 Frege refrains from using terms like *"Identitätsurteil"* or *"Wiedererkennungsurteil"* because this terminology seems to suggest a difference between types of acts of judgment whereas, from a logical point of view, all these distinctions concern the contents of judgements; In this respect Frege is in agreement with Sigwart: *"Urteilsformen"* is a misleading expression; the relevant distinction is that between the act of judging and the content of such an act.

Sigwart, although himself pressing this point (and thus anticipating Frege's disregard for the distinction between assertoric, apodictic, and problematic judgements (Frege 1879, § 4; cf. Schmit 1985) and suggesting an account of the quantity of judgements according to which words like "all" and "some" do not belong to the subject-term but really are predicates, still urges that the *synthesis* accomplished in forming such judgements is of relevance to understanding their contents. Like other psychologistic logicians, Sigwart is particularly fond of genetic explanations and often in his examples he refers to the stages a child goes through in learning his mother tongue, starting from perceptually relevant circumstances. Such a genetic account, Sigwart thinks, could help to show that the analytic-synthetic distinction is merely a relative one. Like other psychologistic logicians, he is interested in the problem of how from simple judgements of perception other judgements can be culled, not by analysis of concepts and inferences therefrom, but through mechanisms of tacit 'inference', memory, selective attention, and noticing the salience of certain features, which render those transitions possible (e.g. from the sight of an apple to the thought of its edibility).

Through these considerations psychologistic logicians became involved in the immensely difficult issue of the relation between *sense perception* and the language in which we talk about perception and in the equally formidable problem of the relation between perceptual information and the *semantic* information obtained from linguistic means of expression. Thus in Erdmann for instance we find the remarkable distinction between sentences expressing *direct* judgements and sentences expressing *communicated* judgements (Erdmann 1892, § 36). According to

that distinction the information that we can extract from, say, "The child is running after the dog" as a perceptual judgement differs significantly from that which we can gather from that sentence taken as a communicated judgement. Or, if we take the trite Kantian examples "A body is heavy" and "A body is extended" as experiential judgements, the alleged greater informativeness of the first (synthetic) judgement as compared with the second will disappear.

This difference — a Fregean might object — has nothing to do with meaning proper but is connected with differences in the observable circumstances under which such sentences are uttered. But even according to Frege we have to be endowed with the relevant recognitional abilities in order to be able to utter a sentence with assertoric force in the relevant circumstances. Therefore, even though we may concede that the *semantically* relevant meaning is that conveyed by the "communicated judgement", still the question remains how understanding that meaning is related to the judgements of recognition we utter in the relevant circumstances.

The way Sigwart tackles these problems is reminiscent of Quine's sophisticated analysis of the ontogenesis of reference. I think it is not at all far-fetched to regard the examples of simple judgments discussed by Sigwart as corresponding to Quine's descriptions of situations with perceptually salient features from which stimulus-meaning is somehow distilled (Quine 1960, §§ 8, 19). Another example of this approach is Sigwart's account of how the notions of falsity and truth fight their way through the jungle of simple representations and get entangled with the linguistic notions of denial and negation on the one hand and of assertion on the other (1889: 159-60 n.).

One further reason why Sigwart's account of simple judgements could have been of interest for Frege is to be found in the latter's doctrine of predicate words as unsaturated expressions (in contradistinction to proper names as saturated expressions). The starting-point of Frege's analysis are singular sentences, that is, sentences formed by means of a predicate word and one or more proper names (e.g. "Plato is a philosopher", "Plato taught Aristotle", etc.). Such sentences had been disregarded by philosophers and logicians because of their exclusive concern with the logic of terms; but it is precisely by concentrating on the logical structure of those sentences that we can bridge the gulf between the logic of terms and the logic of propositions. Now, according to Frege the linguistic expressions for saturated and unsaturated entities (objects or concepts, respectively) have to be themselves saturated or unsaturated; moreover, also the *senses* of proper names must somehow be "saturated" (in contrast with the senses of predicate words):

... von den Teilen eines Gedankens dürfen nicht alle abgeschlossen sein, sondern mindestens einer muß irgendwie ungesättigt oder prädikativ sein, sonst würden sie nicht aneinander haften. So haftet z. B. der Sinn der Wortverbindung "die Zahl 2" nicht an dem des Ausdrucks "der Begriff *Primzahl*" ohne ein Bindemittel. Ein solches wenden wir an in dem Satze "die Zahl 2 fällt unter den Begriff *Primzahl*". Es ist enthalten in den Worten "fällt unter", die in doppelter Weise einer Ergänzung bedürfen ... und nur durch diese Ungesättigtheit ihres Sinnes sind sie fähig, als Bindemittel zu dienen. (Frege 1967 [1892]: 178) [21]

Thus the sense of a proper name cannot possibly be an individual concept, for otherwise it could not "stick on" the sense of a predicate expression. The same holds good for the levels of reference and syntax. (In a letter to Russell Frege (1976: 224) calls it a "logische Urtatsache" that "Der Zerlegung des Satzes entspricht eine Zerlegung des Gedankens und dieser wieder etwas im Gebiete der Bedeutungen".) [22] Now, on any account on which the sense of a proper name does not collapse into that of a definite description an appeal to ostensive acts and related procedures by means of which we bestow names on things will have to be essential. It is precisely in this context that Sigwart's discussion of judgements of naming and recognition indicates ways of usefully supplementing Frege's account.

But also the notion of an unsaturated expression poses certain problems. Frege does not want to construe predication as a relation which connects two pre-existing entities, for to do so would presuppose — as he explains in a letter to Marty (Frege 1976: 164) — that concepts have an independent subsistence. It is a pillar of Frege's theory that concept words can be extracted from the complete sentences in which they occur as components. No wonder that the part of Wundt's theory in which the "predicative" character of concepts is brought to the fore finds Frege's approval. According to Wundt one of the most important features of concepts is their being capable of entering logical relations with other concepts (1893: 96); and these relations are expressed in judgements. However, it is not as if in an act of judgement we combined two already given representations; rather, it is the other way around: we start from judgements and by analyzing them we get to their components. The dispute as to whether logically and epistemologically judgement or concept "comes first" is on the verge of futility, unless it is made clear what the point of such a claim of priority may be. To elucidate this point Wundt employs a metaphor similar to that used by Frege according to which a concept is like an atom: it can leave one compound only to join another one. Neither concepts nor concept words occur in isolation; the former occur instantiated in the objects whose properties they are, the latter in the sentences whose predicates they are. In the second edition of Wundt's *Logik* — but not in the first edition — we find the metaphor

Frege alludes to:

> Die Tatsache, daß die logischen Begriffe nicht ursprünglich selbständig gegebene Denkinhalte, sondern Zerlegungsprodukte der Urteile sind, hat manche Logiker veranlaßt, der Untersuchung des Begriffs die des Urteils voranzustellen. ... Anderseits ist es aber ebenso unleugbar, daß sich die logische Analyse des Urteils auf die Untersuchung der Eigenschaften seiner Begriffselemente stützen muß. Die Logik ist also hier offenbar in der nämlichen Lage wie andere Gebiete, die zu analogen Abstraktionen genötigt werden. Aus denselben Gründen, aus denen der Grammatiker, obgleich das Wort so wenig wie der Begriff isoliert vorkommt, doch der Satzbildung die Wortbildung, oder aus denen der Chemiker, obgleich die chemischen Elemente meist in Verbindungen vorkommen, den Eigenschaften der Verbindungen die der Elemente voranstellt, wird auch für den Logiker diese Ordnung der Gegenstände die zweckmäßigere sein (1893: 97-98). [23]

A similar argument occurs in Frege's article on Boole, where he stresses that a concept is obtained by extracting it from the sentences in which it occurs and adds:

> Allerdings muß der Ausdruck des beurteilbaren Inhaltes, um so zerfallen zu können, schon in sich gegliedert sein. Man kann daraus schließen, daß mindestens die nicht weiter zerlegbaren Eigenschaften und Beziehungen eigne einfache Bezeichnungen haben müssen. Daraus folgt aber nicht, daß losgelöst von den Dingen die Vorstellungen dieser Eigenschaften und Beziehungen gebildet werden; sondern sie entstehen zugleich mit dem ersten Urteile, durch das sie Dingen zugeschrieben werden (1983: [1880-81]: 18-19). [24]

In a later piece, written after 1892 (that is, after the distinction between *Sinn* and *Bedeutung* had been drawn), Frege acknowledges that the terms "unsaturated" and "predicative" fit the sense of an expression better than its reference; and yet, he adds, "es muß dem ['ungesättigt' und 'prädikativ'] doch auch etwas bei der Bedeutung entsprechen; und ich weiß keine besseren Wörter. Vgl. Wundts Logik" (1983 [1892-95]: 129). [25]

As has already been pointed out, according to Wundt a judgement is a unitary act whose components can be distinguished only consequently. Wundt invokes a law of *Zweigliederung*, i.e. of binary articulation to show that all judgements are amenable to being rendered in binary form, which is somewhat reminiscent of Frege's distinction between function and argument. According to Wundt the three main logical operations are negation, addition, and determination. He goes back to Leibniz's theory of determinables, of which he sets out to give an outline in the form of an elaborate calculus burdened however with a redundant and cumbersome notation. One of the main objections Wundt levels against Boole is that in his logical calculus the relation of *determinans* and *determinandum* is not expressed. Characteristically, Boolean conjunction is commutative, whereas the relation of determination, which is

more akin to that of *genus* and *species*, is not. Therefore in general it does not make sense to exchange the order of *determinans* and *determinandum*. Frege considers this distinction of Wundt's of little logical relevance and argues for the superiority of his own notation over those invented by Boole, Schröder, and Wundt (1983 [1880-81]: 37). In spite of their different views on the issue of what notions are worth singling out and representing by the symbolic notation of a logical calculus, Frege considered Wundt's account of the predicative nature of concept-words similar to his own conception of the unsaturatedness of concept-words and functional expressions. The implications of Frege's theory of concept-words are deeper and reach further than those of Wundt's account. According to Frege, unsaturatedness at the linguistic level is a mere hint at the functional character of concepts; and appreciating their functional character is only a first step towards understanding the important notion of a complex predicate. The latter notion plays an essential role in Frege's account of the meaning and truth-conditions of sentences containing expressions of multiple generality and is thus part and parcel of his most celebrated discovery, i.e. quantification theory. Generally, it is appropriate to say that many aspects of Frege's philosophy are corollaries of his theory of concepts and concept-words.

A first step in the development of this theory is Frege's distinction between assertion and predication and a clear statement of the logical relations in which objects and concepts can stand. He points out that confusion of assertion and predication and confusion of subsumption (of an object under a concept) and subordination (of a concept under another concept) are due to a deep-rooted misunderstanding of the rôle of the copula. For this reason he criticizes the doctrine of the double rôle of the copula (as a syncategorematic sign ambiguous between membership, class-inclusion, and identity as well as a sign carrying assertoric force, signifying affirmation). To separate the assertoric force from the predicate is regarded by Frege as a first step towards a new conception of what counts as a predicate expression, applicable not only to simple predicates, such as '*x* walks', but also to complex predicates containing expressions of generality, such as 'being the only *x* anybody wishes to be a friend of everybody else'. This way of constructing new concept-words had been neglected by traditional philosophers. Terms were supposed to represent concepts, and a concept was conceived as a sum of marks; the import of a predication was usually rendered either in the intensional idiom of the concept expressed by the predicate being contained in the concept expressed by the subject or in the extensional idiom of class-inclusion ('the extension of the subject term in the extension of the predicate term'). According to this view, when a judgment is put for-

ward it is the task of the copula to mark either of these relations and to present it as holding.

In Frege's opinion, the traditional doctrine of the copula does not do justice to the most important features of concept-words and concepts, viz. their unsaturatedness and incompleteness, for it presupposes the formation of concept-words and the determination of their sense and reference as already accomplished, in advance of the judgements in which they occur. But, as both Wundt and Frege clearly saw, to stress the priority of the act of judging over that of forming a concept is not of itself of great significance; also Kant had emphasized this point, and yet his insight had not issued in a new conception of predication. What had escaped the attention of philosophers and logicians was the peculiar role that singular (atomic) sentences play as a connecting link between the logic of propositions and the logic of predicates (of which the logic of terms constitutes the monadic part). Frege often stresses the heuristic importance of starting from atomic sentences for gaining an understanding of how more complex propositions can be obtained from atomic propositions, which can be viewed as their generating instances (Frege 1983 [1880-81]: 16, 38 ff.). If, on the other hand, we follow Boole and Schröder and start from the calculus of concepts, there is little chance to recover the truth-functional mode of composition characteristic of the propositional calculus. To understand Frege's point we must remember that in constructing a formal system it was his aim to find the most appropriate way of representing a content, not to build a *calculus ratiocinator*. Frege's notion of a formal system is inseparable from his insight into the recursive properties of language and his identification of the linguistic devices employed in building atomic, molecular, and quantified propositions out of their components. In order to understand this process of composition we have to start from singular propositions expressing judgeable contents.

How had it been possible for singular propositions to baffle philosophers and logicians for such a long time? A reason may be that in the case of sentences like 'Caesar crossed the Rubicon', 'Aristotle talks and walks', 'Plato taught Aristotle' neither the intensional nor the extensional account of predication has a natural application, while sentences expressing class inclusion — or the part-whole relation, which is its intuitive counterpart — seem quite amenable to the logic of terms. 'Horses are animals' can be rendered as 'The extension of "horse" is included as a proper part in the extension of "animal"'; but surely we do not want to say that Aristotle is a part (a piece) of the extension of 'thing that walks and talks', possibly conceived as a scattered universal denoted by a mass term. An obvious way out of this difficulty is to appeal to the

distinction between membership and class inclusion. And of course Frege would agree that we need some such distinction. But he is wary of the notion of a set, because he thinks it suggests the picture of a heap, of an aggregate; therefore he does not want to avail himself of membership as a primitive notion. Frege's 'classes' are extensions of concepts; he emphatically denies that within these (logical) objects one could discern parts, i.e. the individual component members (cf. Frege 1903, § 150). Besides, also in the case of class-inclusion, Frege urges, a more natural paraphrase of 'Horses are animals' is 'If x is a horse, then x is an animal', where there is no allusion to extensions but only to concepts. According to Frege, the key notion of logic is that of an object falling under a concept, not the idea of set and membership. Therefore he considers the notion of the *application* of a function to an argument to yield a unique value as comprising concepts and relations. Thus a concept (the *Bedeutung* of a concept-word) is a mapping from objects into other objects (the two classical truth-values, truth and falsity).

It is not as if Fregean concepts had less being than tables and chairs, as if they were, so to speak, attenuated entities. The correct way of putting the question about their reality is, not to ask what a concept-word stands for, but whether it singles out a function. A sober philosopher may object that at this stage talk of functions and mappings is quite unnecessary: all we have to do is replace the question as to the reference of a concept-word with a question about the objects *of* which a given concept is *true* (Quine 1970). It is conceivable that Frege would have agreed with this objection; but since he had no qualms about quantifying over functions and properties, the edge of Occam's razor showing itself in the objection would have left him unimpressed.

NOTES

1) "With the psychological conception of logic we lose the distinction between the grounds that justify a conviction and the causes that actually produce it. This means that a justification in the proper sense is not possible; what we have in its place is an account of how the conviction was arrived at, from which it is to be inferred that everything has been caused by psychological factors." (Engl. transl. 1979: 147.).

2) In his review of Frege (1879) Ernst Schröder (1880) criticizes Frege for not mentioning any contemporary logicians, e.g. Robert Grassmann. The latter's work *is* referred to

and discussed in Frege's posthumously published paper "Booles rechnende Logik" (Frege 1983: 38). But, curiously enough, Felix Klein (1849-1925), the editor of *Mathematische Annalen* (to whom Frege had offered that paper for publication), complains in his letter of rejection (Frege 1976: 134) that neither Robert nor Hermann Grassmann are mentioned. Thus either Klein had failed to notice Frege's reference to Grassmann, or Frege inserted this reference in the course of revising his paper at some later time. That he did revise it can be taken for granted because of the fact that there are references to passages in Wundt's *Logik* to which nothing corresponds in the 1st ed. (1880) — which was the only one available at the time Frege originally wrote his paper — while they *do* occur in the 2nd ed. (1893).

3) On the whole Frege was in agreement with Cantor's "ontological" claim to having established infinite totalities, cf. Frege (1967 [1892]: 163). Thus it is unclear which contrast Sluga has in mind when he remarks, "If the philosophy of mathematics and the philosophy of logic have recently been dominated by ontological considerations that is not due to the influence of Frege's thought. Such ontological questions seem to derive from a number of different sources, such as Cantor's examination of infinite totalities ..." (1976: 29). For an historically accurate account of Cantor's relations with his contemporaries, cf. Dauben (1979), especially ch. 6 "Cantor's Philosophy of the Infinite".

4) "It was the fate of the revival of Kantianism that because of the interests of the scientific way of thinking it was at first restricted to the theory of knowledge, whose extreme developments towards a decidedly empiricist position led to positivistic transformations on the one hand and to the dissolution of philosophical problems into psychological ones on the other. Thus, just as during the time before Kant, the disastrous predominance of psychologism became widespread, for a few decades, particularly at German universities."

5) To be exact, the Helmholtz attacked by Cantor is the author of "Zählen und Messen"; the Helmholtz attacked by Windelband is the author of "Die Tatsachen in der Wahrnehmung", where Helmholtz criticizes Kant's view that the axioms of geometry are known *a priori*. In fact, as far as the propositions of arithmetic are concerned, Helmholtz holds an extreme form of psychologism.

6) "The conceptual oscillations and the confusion connected with them, which, at first coming from the far east of Germany, have for nearly a hundred years been instilled into philosophy, manifest themselves most obviously in questions concerning the infinite, as becomes clear from countlessly many publications of our present-day philosophical literature, be they criticistic or positivistic, psychologistic or philologistic."

7) For a similar judgement, cf. Føllesdal (1982). A different opinion is expressed by Mohanty (1982, ch. 2). Cf. also B. Smith's contribution to the present volume.

8) At the close of this article Frege does not miss the opportunity to stigmatize the confusion between logical and psychological notions, encouraged by the use of the word "Vorstellung". This article shows that, as far as physics is concerned, Frege's thinking is strikingly holistic and even conventionalist; cf. his comment that only the whole of the basic laws of dynamics can be compared with experience and be confirmed by it ("Nur das Ganze der dynamischen Grundgesetze kann als Hypothese mit der Erfahrung verglichen und durch sie bestätigt werden" (1967: 116)).

9) Although in the context of discussing Hilbert's views Frege makes some very interesting remarks about the *formalization* of the axioms of geometry and the underlying logic, on the whole his position is unmistakably retrograde: cf. Dummett (1976).

10) "an important work, which as no other has helped the logical development of the last decades to take the path of psychologism."

11) "the attempt by means of an empirical theory to establish that which itself is the presupposition of all theory."

12) Surely the fact that in presenting Frege's essay "Der Gedanke" (1918) to the readers of the *Beiträge zur Philosophie des deutschen Idealismus* the Neo-Kantian Bruno Bauch stressed certain alleged affinities between Lotze and Frege can at best be seen as evidence for Bauch's way of reading Frege but not as Sluga (1984: 342) claims — for Lotze's "influence" on Frege. I do not mean to claim that Frege was not acquainted with Lotze's *Logik*; actually, there is a piece in Frege's *Nachlass* which contains a criticism of a certain doctrine held by Lotze. Cf. Dummett (1981), Picardi (1983). I doubt, however, that Lotze had any specific or constructive influence on Frege.

13) A detailed discussion of Brentano's and Windelband's use of this terminology is to be found in Sigwart (1889: 154 n. ff.); cf. Ziehen (1920: 365 n.).

14) "Symbols have the same importance for thought that discovering how to use the wind to sail against the wind had for navigation." (Engl. transl. Bynum 1972: 84).

15) "One does not, after all, learn about the structure of the human body by looking at the clothed body; on the contrary, everyone knows that the shapes and folds of the dress can become intelligible only if one knows about the body."

16) "that logic is a special branch of psychology is sufficient to distinguish these two disciplines from each other."

17) "... which takes place on the very confines of the mental and which for that reason cannot be completely understood from a psychological standpoint. For in grasping the law something comes into view whose nature is no longer mental in the proper sense, namely the thought; and this process is perhaps the most mysterious of all." (Engl. transl. 1979: 145).

18) "I should say that this question is still far from being grasped in all its difficulty. People are usually quite content to smuggle thinking in through a back door in the imagination, so that they don't themselves know how it really got in." (Engl. transl. 1979: 145).

19) "The question why and with which right we acknowledge a law of logic to be true, logic can answer only by reducing it to another law of logic. When this is not possible, logic can give no answer." (Engl. transl. 1967: 15).

20) "I choose this expression in order to have a common designation for those statements which otherwise would be called either judgements of subsumption (where the predicate is congruent with a more general representation) or judgements of identity (where the predicate is completely congruent with a subject). In the most simple type of case there is no clear boundary between those two; and a process — the awareness of agreement between that which is given as a whole and a previously known representation — is essentially the same in both cases."

21) "For not all the parts of thought can be complete; at least one must be 'unsaturated' or predicative; otherwise they would not hold together. For example, the sense of the phrase 'the number 2' does not hold together with that of the expression 'the concept *prime number*' without a link. We apply such a link in the sentence 'the number 2 falls under the concept prime number'; it is contained in the words 'falls under' which need to be completed in two ways... only because their sense is thus 'unsaturated' are they capable of serving as a link." (Engl. transl. 1984: 193).

22) "The analysis of the proposition corresponds to an analysis of the thought, and in turn to something in the realm of meanings, and I should like to call this a primitive logical fact." (Engl. transl. 1980: 142).

23) "The fact that originally logical concepts are not independedly given contents of thought but products of the analysis of judgements has induced some logicians to let the investigation of judgement preceed that of concepts ...On the other hand, it is equally undeniable that logical analysis of judgement must base itself on an examination of the properties of their conceptual elements. Thus it is plain that here logic finds itself in the same position as other disciplines which are constrained to perform analogous abstractions. For

the same reasons, for which the grammarian gives word-formation precedence over sentence-formation, although words as well as concepts do not occur in isolation, and for which the chemist gives the properties of the elements precedence over the properties of combinations, although chemical elements mostly occur in combination, the same order will be the most suitable one for the logician.''

24) "Of course, if the expression of the content of a possible judgement is to be analysable in this way, it must be already itself articulated. We may infer from this that at least the properties and relations which are no further analysable must have their own simple designations. But it doesn't follow from this that the ideas of these properties and relations are formed apart from objects; on the contrary, they arise simultaneously with the judgement in which they are ascribed to things.'' (Engl. Transl. 1979: 17).

25) "The words 'unsaturated' and 'predicative' seem more suited to the sense than the meaning; still there must be something on the part of the meaning which corresponds to this, and I know of no better words. Cf. Wundt's *Logik*.'' (Engl. transl. 1979: 119 n.).*

REFERENCES

Angelelli, Ignacio. 1967. *Studies on Gottlob Frege and Traditional Philosophy*. Dordrecht: Reidel.

Bauch, Bruno. 1919. "Lotzes Logik und ihre Bedeutung im deutschen Idealismus''. *Beiträge zur Philosophie des deutschen Idealismus* 1. 48-58.

Brentano, Franz. 1874. *Psychologie vom empirischen Standpunkt*. Leipzig: Duncker & Humblot. Vol. II. (2nd revised ed. 1911. Repr., Hamburg: Felix Meiner, 1971.)

Bynum, Terrell Ward. 1972. "On the Life and Work of Gottlob Frege''. *Gottlob Frege. Conceptual Notation and Related Articles* ed. by T.W. Bynum, 1-54. Oxford: Oxford Univ. Press.

Cantor, Georg. 1932. *Abhandlungen mathematischen und philosophischen Inhalts*. Ed. by Ernst Zermelo, with a biographical sketch by Adolf Fraenkel. (Repr. Hildesheim: Olms 1966. ["Über unendliche lineare Punktmannigfaltigkeiten", (139-246); "Über die verschiedenen Standpunkte in bezug auf das aktuelle Unendliche" (370-77); "Mitteilungen zur Lehre vom Transfiniten", (378-439). Review of Frege 1884, (440-41)].)

Dauben, Joseph Warren. 1979. *Georg Cantor: His mathematics and philosophy of the infinite*. Cambridge, Mass.: Harvard Univ. Press.

Dummett, Michael. 1973. *Frege: Philosophy of Language*. London: Duckworth.

——. 1976. "Frege on the Consistency of Mathematical Theories". Schirn 1976 I, 229-42.

——. 1981. "Frege's 'Kernsätze zur Logik'". *Inquiry* 24. 439-54.

——. 1982. "Objectivity and Reality in Frege and Lotze". *Inquiry* 25. 95-114.

Erdmann, Benno. 1892. *Logik*. Vol. I. Halle: Max Niemeyer.

Føllesdal, Dagfinn. 1982. "Husserl's Conversion from Psychologism and the *Vorstellung*-Meaning-Reference Distinction: Two separate issues". *Husserl, Intentionality and Cognitive Science* ed. by Herbert Dreyfus, 53-56. Cambridge, Mass.: MIT Press.

Frege, Gottlob. 1879. *Begriffsschrift: Eine der arithmetischen nachgebildete Formelsprache des reinen Denkens*. Halle: Louis Nebert. (Repr. in *Begriffsschrift und andere Aufsätze* ed. by Ignacio Angelelli, VII-88. Hildesheim: G. Olms, 1971. Engl. transl. in Bynum 1972, 101-203.)

——. 1882. "Über die wissenschaftliche Berechtigung einer Begriffsschrift". *Zeitschrift für Philosophie und philosophische Kritik* 81. 48-56. (Repr. in *Begriffsschrift und andere Aufsätze* ed. by Ignacio Angelelli, 106-114. Hildesheim: G. Olms, 1971. Engl. transl. in Bynum 1972, 83-89.)

——. 1884. *Die Grundlagen der Arithmetik*. Breslau: W. Koebner. (Reset as 2nd ed. 1934. Breslau: Marcus. Repr. Darmstadt: Wissenschaftliche Buchgesellschaft 1961 & Hildesheim: G. Olms 1977; Engl. transl. by J.L. Austin, 2nd rev. ed. Oxford: Blackwell, 1978.)

——. 1893-1903. *Grundgesetze der Arithmetik*. 2 vols. Jena: Pohle. (Repr. Hildesheim: G. Olms, 1962. Engl. part. transl. by M. Furth, Los Angeles: Univ. of California Press, 1967.)

——. 1967. *Kleine Schriften* ed. by Ignacio Angelelli. Darmstadt: Wissenschaftliche Buchgesellschaft. (2nd ed., Hildesheim: G. Olms, 1983: includes review of *Das Prinzip der Infinitesimal-Methode und seine Geschichte* by Hermann Cohen (1885), 99-102; "Über das Trägheitsgesetz" (1891), 113-124; "Funktion und Begriff" (1891), 125-142; "Über Sinn und Bedeutung" (1892), 143-162; Review of *Zur Lehre vom Transfiniten* by Georg Cantor (1892), 163-66; "Über Begriff und Gegenstand" (1892), 167-78; Review of *Philosophie der Arithmetik. I* by Edmund Husserl (1894), 179-92; "Kritische Beleuchtung einiger Punkte in E. Schröders *Vorlesungen über die Algebra der Logik*" (1895), 193-210; "Über die Zahlen des Herrn Schubert" (1899), 240-

61; "Der Gedanke: Eine logische Untersuchung" (1918), 342-61. Engl. transl. by M. Black, V.H. Dudman, P. Geach, H. Kaal, E.-H. W. Kluge, B. McGuinness, R.H. Stoothoff. Oxford: Blackwell 1984.)

——. 1976. *Wissenschaftlicher Briefwechsel*. Ed. by Gottfried Gabriel, Hans Hermes, Friedrich Kambartel, Christian Thiel, Albert Veraart. Hamburg: F. Meiner. (Engl. transl. by H. Kaal, Oxford: Blackwell, 1980.)

——. 1983. *Nachgelassene Schriften*. Ed. by Hans Hermes, Friedrich Kambartel, Friedrich Kaulbach. 2nd revised and enlarged ed. Hamburg: Meiner. (Engl. transl. of the 1st ed. (1969) by P. Long & R. White, Oxford: Blackwell, 1979.)

Gabriel, Gottfried. 1976. Editor's Introduction to the Frege-Husserl correspondence. Frege (1976). 91-93.

——. 1984. "Fregean Connection: *Bedeutung*, value and truth-value". *Frege: Tradition and influence* ed. by Crispin Wright, 189-193. Oxford: Blackwell. 1986.

——. "Frege als Neukantianer". *Kant-Studien* 77. 84-101.

Helmholtz, Hermann von. 1856-1867. *Handbuch der physiologischen Optik*. Leipzig: Voss.

——. 1971. *Philosophische Vorträge und Aufsätze* ed. by Herbert Hörz and Siegfried Wollgast. Berlin: Akademie Verlag. ("Die Tatsachen in der Wahrnehmung" [1879], 247-300. "Zählen und Messen erkenntnistheoretisch betrachtet" [1887], 301-336.)

Husserl, Edmund. 1970. *Philosophie der Arithmetik* ed. by Lothar Eley (= *Husserliana* 12. Den Haag: Martinus Nijhoff. (1st ed., 1891.)

——. 1913. *Logische Untersuchungen*. Vol. 1: *Prolegomena zur reinen Logik* 2nd ed. (1st ed. 1900. Repr. Tübingen: Niemeyer, 1980.)

James, William. 1890. *The Principles of Psychology*. New York: Holt. (Repr. New York: Dover, 1950.)

Johnson, William Ernest. 1921. *Logic: Part I*. (Part II, 1922. Part III, 1924.) Cambridge: Cambridge Univ. Press.

Kreiser, Lothar. 1984. "G. Frege 'Die Grundlagen der Arithmetik' - Werk und Geschichte". *Frege Conference 1984* ed. by G. Wechsung, 13-27. Berlin: Akademie-Verlag.

Lipps, Theodor. 1893. *Grundzüge der Logik*. Hamburg & Leipzig: Voss.

Lotze, Hermann. 1852. *Medizinische Psychologie*. Leipzig: Weidmann.

——. 1880. *Logik: System der Philosophie. Part I*. Leipzig: S. Hirzel.

Mach, Ernst. 1905. *Erkenntnis und Irrtum*. Leipzig: J.A. Barth. (Repr., Darmstadt: Wissenschaftliche Buchgesellschaft, 1976.)

Marty, Anton. 1884. "Über subjectlose Sätze und das Verhältnis der Grammatik zur Logik und Psychologie". *Vierteljahresschrift für wissenschaftliche Philosophie* 8. 161-192.

Mill, John Stuart. 1872. *System of Logic Ratiocinative and Inductive.* 8th ed. London: Longmans, Green & Co. (1st ed., 1843.)

Mohanty, Jitendranath. 1982. *Husserl and Frege.* Bloomington: Indiana Univ. Press.

Patzig, Günther. 1966. "Einleitung". *Logische Untersuchungen* by G. Frege, 5-29. Göttingen: Vandenhoeck & Ruprecht.

Picardi, Eva. 1983. "On Frege's Notion of *Inhalt*". *Atti del convegno internazionale di storia della logica. San Gimignano, 4-8 dicembre 1982* ed. by Vito Michele Abrusci, Ettore Casari, Massimo Mugnai, 307-312. Bologna: CLUEB.

Poggi, Stefano. 1977. *I sistemi dell'esperienza: Psicologia, logica e teoria della scienza da Kant a Wundt.* Bologna: Il Mulino.

Quine, Willard Van Orman. 1960. *Word and Object.* Cambridge, Mass.: MIT Press.

——. 1970. *Philosophy of Logic.* Englewood Cliffs: Prentice-Hall.

Resnik, Michael. 1980. *Frege and the Philosophy of Mathematics.* Ithaca N.J. & London: Cornell Univ. Press.

Riehl, Alois. 1877. "Die englische Logik der Gegenwart". *Vierteljahresschrift für wissenschaftliche Philosophie* 1. 50-80.

Schirn, Matthias ed. 1976. *Studien zu Frege/Studies on Frege.* 3 vols. Stuttgart-Bad Cannstatt: Frommann-Holzboog.

Schmit, Roger. 1985. "Allgemeinheit und Existenz: Zur Analyse des kategorischen Urteils bei Herbart, Sigwart, Brentano und Frege". *Grazer philosophische Studien*, 23, 59-78.

Schnädelbach, Herbert. 1983. *Philosophie in Deutschland 1831-1933.* Frankfurt am Main: Suhrkamp.

Schröder, Ernst. 1880. Review of Frege (1879). *Zeitschrift für Mathematik und Physik* 25. 81-94.

Schuppe, Wilhelm. 1878. *Erkenntnistheoretische Logik.* Bonn: Marcus.

Sigwart, Christoph. 1889-93. *Logik.* 2 vols. 2nd revised and enlarged ed. Freiburg i. B.: J.C.B. Mohr (Paul Siebeck). (1st ed. 1873-78; 4th revised ed. by Heinrich Meier. Tübingen: Mohr 1911, Repr. 1921.)

Sluga, Hans. 1976. "Frege as a Rationalist". Schirn 1976. I, 27-47.

——. 1980. *Gottlob Frege.* London: Routledge & Kegan Paul.

——. 1984. "Frege: The early years". *Philosophy in History* ed. by Richard Rorty, J.B. Schneewind, Quentin Skinner, 329-356. Cambridge: Cambridge Univ. Press.

Thiel, Christian. 1984. "Liebmann, Otto". *Enzyklopädie Philosophie und Wissenschaftstheorie.* Ed. by Jürgen Mittelstraß, Vol. II. 611-612. Mannheim/Wien/Zürich: BI-Wissenschaftsverlag.

Ueberweg, Friedrich. 1882. *System der Logik und Geschichte der logischen Lehren.* 5th ed. Ed. by J.B. Meyer. Bonn: A. Marcus. (1st ed. 1857).

Veraart, Albert. 1976. "Geschichte des wissenschaftlichen Nachlasses
    Gottlob Freges und seiner Edition: Mit einem Katalog des ursprüngli-
    chen Bestands der nachgelassenen Schriften Freges". Schirn 1976. I.
    49-106.
Weyl, Hermann. 1966. *Philosophie der Mathematik und Naturwissen-
    schaft*. München & Wien: Oldenbourg.
Windelband, Wilhelm. 1884. *Präludien: Aufsätze und Reden zur Philo-
    sophie und ihrer Geschichte*. 2 vols. Tübingen: Mohr.
——. 1892. *Lehrbuch der Geschichte der Philosophie*. 15th ed. revised
    and enlarged by Heinz Heimsoeth. (Repr. of the 13th. ed. of 1935.
    Tübingen: J.C.B. Mohr, 1980.)
Wundt, Wilhelm, 1880-83. *Logik: Eine Untersuchung der Prinzipien der
    Erkenntnis und der Methoden wissenschaftlicher Forschung*. Vol. I:
    Erkenntnislehre. Vol. II: *Methodenlehre*. Stuttgart: F. Enke. (2nd re-
    vised ed. 1893, 1894-95.)
Ziehen, Theodor. 1920. *Lehrbuch der Logik auf positivistischer Grund-
    lage mit Berücksichtigung der Geschichte der Logik*. Bonn: A. Mar-
    cus/E. Weber. (Repr., Berlin & New York: Walter de Gruyter, 1974.)
Zweig, Arnulf. 1967. "Sigwart, Christoph". *The Encyclopedia of Phi-
    losophy* ed. by Paul Edwards, vol. VII, 441-442. New York: Macmil-
    lan.

HUSSERL, LANGUAGE, AND THE ONTOLOGY OF THE ACT

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> The objection that we are attempting here a restitution of
> the Aristotelian-scholastic logic, on whose inferior value
> history has pronounced judgment, should not perturb us.
> Perhaps it may yet turn out that the discipline in question
> is by no means so narrow in scope and so poor in pro-
> found problems as it is reproached with being. Perhaps
> traditional logic was merely a highly imperfect and dim
> realization of the idea of pure logic, but none the less
> competent and worthy of respect as a first beginning
> (Husserl, "Prolegomena to Pure Logic", § 13).

1. *Tasks of an Ontology of Language*

The term 'ontology' has played a role in recent discussions of lan-
guage and linguistics almost exclusively in connection with the problem
of the so-called 'ontological commitments' of a linguistic theory. In the
present paper however the term 'ontology' is used in a way that is at
once more modest and more ambitious. It is more modest, because on-
tology will be understood not as a higher-order investigation of e.g. lin-
guistic theories, but as a discipline having as its subject-matter the ob-
jects themselves, which such theories investigate. It is more ambitious,
because it will extend beyond 'language' as narrowly conceived to in-
clude also, for example (in conformity with an older tradition of universal
grammar), the acts and actions of language-using subjects. Indeed we
may say that the ontology of language is concerned precisely with the re-
lations between uses of language, both overt and covert, and other enti-
ties, whether in the world or in the mind of the subject.

A first survey of the sorts of relations which might come into ques-
tion for such an ontology would include:

(a) relations between a referring use of an expression and its object,[2]

(b) relations between the use of a (true) sentence and that in the world which makes it true, [3]

(c) relations between a used predicate and the object or objects of which it is predicated, and also, at least in certain cases, between this object and those of its parts and moments in virtue of which the predicate holds,

(d) relations among uses of language themselves, for example anaphoric relations, relations between those events which are referring and predicating uses of expressions, relations between successive uses of sentences in higher-order structures such as narratives, arguments, conversations, and so on.

I shall have something to say about all of these species of examples in what follows. My main concern, however, will be with the ways in which uses of language are bound up with mental acts. Thus for example I shall be concerned with:

(e) relations between mental acts on the one hand and underlying mental states (attitudes, beliefs), on the other,

(f) relations between my acts and states and those associated uses of language which are overt actions on my part, for example actions of promising or of asking questions,

(g) relations between my mental acts and states and the overt actions (including utterances) of other subjects with whom I come into contact (relations of understanding, of communication).

It is remarkable how few analytic philosophers have attempted to describe any of these relations in more than merely metaphorical terms — as if language, narrowly conceived as a system of abstract types, would exist in splendid isolation from mental and other sorts of structure. Proponents of causal and historical theories of names have taken some initial steps in connection with (a), but their accounts are too narrowly causal, and often little more than promissory notes. Advocates of the semantics of natural language have done some work in the areas of (c) and (d), but the analytic philosopher's understanding of the object-predicate relation has advanced not at all since Frege conceived his peculiar function-argument interpretation. Moreover, work on the interrelations between successive uses of language, at least on the part of the more philosophically minded theorists of language, has been concentrated overwhelmingly on those cases which can be pressed within the schemata of one or other orthodox system of logic. Some work, especially that associated with the names of Grice, Schiffer, Strawson, has been done by analytic philosophers on the interconnections between language and associated mental acts, and proponents of speech act(ion) theory have made some headway in particular with parts of (f) and (g), but their

accounts do not mesh at all with any worked-out ontology: they resolve into elucidations of certain logical relations between sentences (promise S is felicitous iff...), and throw little light on how speech act(ion)s are structured in such a way as to be bound up in more complex wholes with those mental events which are acts and those mental states which are beliefs, convictions, desires, etc.

There is one philosophical tradition, however, which did concern itself precisely with the whole range of relations of the given sort. It is the tradition which began with the work of Franz Brentano (1838-1917) and his students, above all Alexius Meinong (1853-1920), Carl Stumpf (1848-1936) and Anton Marty (1847-1914), and reached its high-point in the *Logical Investigations* of Edmund Husserl (1859-1938). This tradition was carried forward in philosophy by realist phenomenologists such as Johannes Daubert (1877-1947) and Adolf Reinach (1883-1917) and in linguistics by such thinkers as Roman Jakobson (1896-1983) and Karl Bühler (1879-1964). The present essay is a brief survey of the philosophical work on language by the members of this tradition, together with a comparison of the results of their work with other, competing approaches.

2. *Species and Generality*

Of central importance for what follows will be the theory of dependence-relations set forth, in germ, in Husserl's third Logical Investigation and anticipated by Brentano in his lectures of 1887-91 on *Deskriptive Psychologie*.[4] Each of the various different relations mentioned above can be understood in the terms of this ontology, in a way that is at once elegant and economical. Before presenting Husserl's views on dependence, however, it will be useful to make some more general remarks on the subject of generality: for the opposition between *species* and *instance*, between what is general and what is particular, will turn out to be fundamental to the entire project of a theory of language in the Husserlian sense.

Imagine that we are called upon to look at the world as a zoologist, or a phonologist, or a warehouse manager, or a fingerprint expert might. We notice very soon that some features of the world are constant, while others vary. It is important not to import philosophical simplifications — of either what one might call the Platonistic or the nominalist sort — into the description of this fact. Constancy occurs not because there are, in addition to individual realia, abstract essences which somehow reappear, indentically, in different objects. And nor does it occur because of some not further explicable propensity of subjects to

use general terms in certain ways. Constancy occurs, rather — or at least this is the core of the Brentano-Husserl view — because objects have real parts or moments ('respects') which stand to each other in relations of *perfect similarity*. [5] These may be moments of the most simple sort, for example moments of colour or taste. (The sentence 'Hans's arm is the same colour as Bruno's leg' is made true by the perfect similarity between the individual colour-moments inhering in their respective limbs.) Or they may be more complex, higher-order structures founded upon these. (The sentence 'these two sequences of whistles are performances/instances of the same melody' is made true by a relation of perfect similarity between certain Gestalt-qualities inhering in the respective quantities of sound-material.)

In virtue of such relations of perfect similarity, which may obtain on different levels, objects are gathered into classes of actual and possible similars called by Husserl 'species'. Such species are not additional abstract entities. Rather, talk of species is to be cashed out in terms of relations of similarity between certain real parts and moments of entities on the level of what is concrete and contingent.

This deflationary interpretation of Husserl's thinking on species and generality is controversial. The issue is confused by the fact that one important aim of the *Logical Investigations* was to attack psychologism in logic, and particularly in volume I of the work — the "Prolegomena to Pure Logic" — where Husserl is concerned to dramatise the inadequacies of psychologism, he seems to put forward a Platonistic view of the nature of species as 'ideal singulars', a view which contrasts, to some extent, with the similarity view sketched above. When we look more carefully at Husserl's *use* of the species concept in the body of the work, however, then it becomes clear that his motives for introducing talk of species are not those of the Platonist. Indeed he pours scorn on Platonism in the traditional sense — on the view that species are real entities (LU II § 7) — and he spends little time reflecting on species themselves or on their ontological properties. He is much rather concerned with the *instances* of species and with the problem of finding a means of doing justice to the manifold sorts of constancy or regularity and to the manifold sorts of law-governed connection that we encounter among such instances, both in the world and in our mental acts.

Why, then, did Husserl utilise this terminology of species at all? This was, I think, for two reasons. First, it is the basis of Husserl's theory of logic (a) that logic is a science having its own specific subject-matter, and (b) that this subject-matter should not be a matter of empirically occurring instances but of entities somehow outside the world of what happens and is the case. Logic is a science of thinkings, inferrings, rea-

sonings *in specie*: it is a science of the relations between species of these given sorts (see e.g. LU II § 2). Second, it was important to Husserl's theory that the real relations of similarity amongst logical entities do not occur as it were at random, but that they themselves exhibit a certain order. In particular, they manifest a hierarchical structure, so that species are included in other species at higher levels of generality, the corresponding predicates being organised into trees of determinables and determinates. This is a property of universals that was taken for granted by logicians of a more traditional bent, from Aristotle and Porphyry to W.E. Johnson.[6]

3. *Husserl's Theory of Dependence and its Linguistic Applications*

We are now in a position where we can say something about Husserl's theory of dependence, which is all of a piece with his theory of species. For Husserl recognised that there are, in addition to the vertical (inclusion) relations between species, certain sorts of *lateral* relations, sharing with them important modal properties. Examples of the vertical relations would be:

> every instance of the species *red* is also an instance of the species *colour*;
>
> every instance of the species *mammal* is also an instance of the species *animal*;
>
> every instance of the species *judgment* is also an instance of the species *mental act*.

Such relations involve moving from one species to another along given branches of a single species-tree. They can be more or less satisfactorily captured by means of the familiar inclusion relation of standard set theory. Lateral relations, in contrast, involve moving from one branch to another, or perhaps even moving to a wholly different tree. Such relations, even when conceived merely extensionally, fall outside standard set theory or any of its more usual extensions. Examples of such lateral relations are:

> no instance of the species *funeral* occurs, without a prior and associated instance of the species *death*;
>
> no instance of the species *colour* exists, without a simultaneous and associated instance of the species *visual extension*;
>
> no instance of the species *phoneme* is also an instance of the species *edible thing*;
>
> no instance of the species *red* coincides with (occupies the same spatio-temporal area as) an instance of the species *green*.

These relations are, in Husserl's terminology, relations of dependence and of necessary exclusion or incompatibility. Such relations are of course in a certain sense trivial (no less trivial, indeed, than the vertical or analytic relations which are captured in the *arbor porphyriana* of the

traditional sort). This does not mean, however, that they can be ignored; and nor, either, does it mean that there is not a great advantage to be derived in embedding them within a theoretical framework within which their status can be clarified and their character of apparent arbitrariness removed. [7] The theory of such relations has indeed been shown, in as yet unpublished work by Kit Fine, to yield a mathematical framework of some elegance and complexity, though it would take us too far from our main concerns to develop the details of the theory here. [8] Suffice it to point out that Husserl distinguishes between one-sided and reciprocal dependence, e.g. between the one-sided dependence of an instance of the species *musical tone* on an instance of the species *temporal duration*, and the three-sided mutual dependence of instances of the species *pitch*, *timbre* and *loudness* within a given tone.

Such n-fold dependence relations correspond to n-fold dimensions of variation in the space of objects governed by the relations in question. Husserl's own fourth Investigation is in fact an application of the theory of dependence to the relations structuring the space of *meaningful uses of language*. Uses of language can be divided, at different levels, into (relatively) dependent and (relatively) independent, in a way that can be shown to generate a categorial order of types of such uses (i.e. of the various 'parts of speech'). Thus Husserl's work on the laws governing dependent and independent meanings influenced the development of categorial grammar by Leśniewski and Ajdukiewicz (see Smith & Mulligan 1982, § 5), and the idea of a grammatical theory built up on the basis of a theory of the dependence relations between parts of sentences has since been developed formally by linguists such as Mel'čuk and Hudson as alternatives to grammars of the more familiar transformational sort. [9] All of these grammars, however, exploit theoretical resources weaker than those available to Husserl, since they employ exclusively the notion of unilateral dependence or its equivalents. The idea of a dependence or categorial grammar utilising also relations of mutual dependence is currently in process of investigation by W. Haas.

Husserl's theory of dependence was employed also by the linguist Roman Jakobson, above all in his work on distinctive features in phonology and on implicational universals of language acquisition (see Holenstein 1976). But its most thorough-going application was carried out by the Munich phenomenologist Adolf Reinach in his "Die apriorischen Grundlagen des bürgerlichen Rechts" of 1913. Reinach's work is, notwithstanding its somewhat misleading title, an investigation of the ontology of those complex structures which are actions of promising, commanding, forgiving, questioning, and so on, structures which straddle the borderlines not only of linguistics and psychology but also of juris-

prudence and the theory of action. A good case can indeed be made for the claim that Reinach, already in 1913, had set forth the essential elements of what later came to be called the theory of speech acts. His work even contains a discussion of the various 'infelicities' to which speech acts can be subjected, not, however, in terms of any quasi-logical 'conditions of satisfaction', but rather in terms of a theory of the various possible sorts of ontological modifications which structures involving speech acts may undergo, a theory which is then applied also to throw light on the ways in which such structures may be affected by determinations of the positive law. [10]

4. *Acts and their Distinctive Features*

It is Husserl's own application of his theory of species and dependence to the problem of linguistic meaning which will engage our attention for the remainder of this paper. Husserl's theory of meaning in the *Logical Investigations* is an act-based theory. Language is seen as having meaning only to the extent that there are subjects who bestow meanings upon specific expressions in specific sorts of mental acts. [11] Before we can present this theory, however, we shall need to say something about the internal structures of mental acts in general.

Internal structure is captured by recognising dependence relations amongst really existing parts. Thus every act, according to Husserl, manifests the three distinctive features of quality, matter and intuitive act-content. These three features stand in a three-sided dependence relation: no instance of the species *act quality* can exist except in a larger whole in which it is bound up with instances of the species *matter* and *intuitive content*, and these in turn cannot exist without each other and without an instance of the species *act quality.* The space of acts is in this sense three-dimensional. [12]

The quality of an act is the way in which the act is intentionally directed towards its object: categorially or hypothetically, in perception or in imagination, and so on. The matter of an act is that feature of the act in virtue of which its object is given as an *F* or as a *G*: as a flower or as a rose, as a noise or as an explosion, as inviting or as threatening, and so on. [13] And the intuitive content (which Husserl also refers to as 'hyletic data') is that feature which embraces all that is sensuously given in the act, including, for an act of language-use, *sensuous signs* (words, or such constituents of thoughts as correspond to words).

What does Husserl mean when he says that an act exhibits these three distinctive features? Consider an act of seeing an apple. This act can be

imagined as varying in (at least) three different ways: I can imagine my-
self turning away from the apple and remembering exactly what I saw.
My act of remembering then has a matter and intuitive content that are
similar to those of the perceptual act on which it is founded. The quality
of the act of memory, however, is quite different from that of the per-
ception that precedes it. Similarly, I can imagine myself seeing the ap-
ple, but in such a way that what I (think I) see is a pear. Here quality
and intuitive content are the same, but the matter is different. Or I can
imagine myself seeing the apple e.g. under different lighting conditions.
Quality and matter are thereby fixed, while intuitive content varies. Or
again: suppose that I make two different assertions, one after the other.
Here the qualities involved in my two acts are the same, the matters dif-
fer. If, on the other hand, I assert p and then subsequently wonder whe-
ther p, then the matters are the same, the qualities differ.

Quality, matter and intuitive content can themselves in turn be inter-
nally complex. Thus consider the intuitive content of an act of percep-
tion of a musical tone. Here we discover at least three abstractly distin-
guishable parts of the content, corresponding to the three abstractly di-
stinguishable features of the tone — its pitch, timbre and loudness —
mentioned above. Just as these features reflect dimensions of variation
in the tone, so the corresponding parts of the intuitive content reflect di-
mensions of variation in the act. And it is easy to see that, as with the
tone, so also with the act, each part or feature is such that, as a matter
of necessity, it cannot exist in isolation from the others.

Importantly, this claim is not affected by the fact that there are many
of us who hear tones but do not *know* that we thereby also hear, say,
timbre (who do not know what timbre is). For the existence of an act
part is not to be confused with its being noticed or recognised: the fact
that a subject is not able to identify, discriminate or name parts, mo-
ments or features of his acts is irrelevant to the question whether or not
they are there. [14] If Fritz can hear a difference between a violin tone and
an oboe tone of the same pitch and intensity, then his act contains a
timbre-component. He needs only to hear the difference, not say or re-
cognise what it consists in. As we shall see, this is one dimension of the
ontology of the act — we shall encounter others below — to which phe-
nomenology would seem to be inadequate. For the dimensions of acts,
like the dimensions of musical tones, are in some sense *objective*; they
are independent of what an individual or a society notices, or of what a
natural language expresses.

It has been assumed in all of the above that mental acts are internally
complex spatio-temporal entities whose features instantiate species (in
the sense of our discussion in § 2). This holds in particular of acts of be-

stowing meaning upon expressions, which are simply those acts which do the job of supplying *objects* for the expressions in question. These objects are things, events, processes, etc., in the case of nominal expressions, states of affairs in the case of judgments. Such 'objectifying acts', too, manifest the three dimensions of matter, quality and intuitive content, a fact which Husserl exploits to produce his own, quite specific account of linguistic meaning. He argues, in fact, that linguistic meanings are, just, certain species: they are, roughly, the species of those acts which are acts of meaning-bestowal. [15] Two immediate advantages of this theory can be pointed out immediately. The first is trivial, relating to an ambiguity in our use of the verb 'express'. Thus on the one hand we are accustomed to saying that uses of language express their (ideal, abstract) *meanings*, and on the other hand that such uses express certain *acts* on the part of the language-using subject. This ambiguity is not a matter of accident, on Husserl's theory; it flows directly from the fact that act and meaning relate to each other as instance to species. The second advantage relates to uses of language in communication. If Erna understands what Hans says, then whilst Hans's and Erna's thoughts are numerically distinct internally complex events, they are yet such that, in virtue of the similarity of their matters (and therefore also of their objects), they are instances of one and the same species (at some point on the meaning tree). When two interlocutors successfully communicate we can describe what this success consists in by appealing to this identity of species, that is, to the existence of a certain constancy or regularity in the space of mental acts of the relevant community of language-using subjects.

5. *The Place of Mental Acts*

Now whilst Brentano and Husserl have shown that an ontological theory can be developed which can do justice to the structures of acts, it remains the case — as is unavoidable, given the nature of the subject-matter — that such an ontology is both problematic and highly complex. There remains, therefore, a certain temptation to ignore acts and to look instead at linguistic expressions. Such expressions are after all obviously and cleanly separable from each other and — in non-Cretan cases — from associated referents. They also have the advantage of being publicly accessible. Further, many of the structures of acts are manifested also in the kinds of things we *say*, and thus the linguistic study of descriptions or reports of mental acts may well have light to throw on such structures, were its advocates once freed of the tendency to read in-

to the domain of acts structural simplifications derived from the spheres of logic or language. [16]

More often, however, the philosophical investigation of language has been held to enable the by-passing of theoretical concern with mental acts through the study of those overt *actions* in which language gets used. As is shown already by the work of Reinach, there is much in the action-centred approach which makes it congenial to the ontological position defended here. It is an approach which rejects the conception of language as a matter of abstract types, turning away from abstract models in general and paying attention instead to the real events, scattered through time and space, in which language gets used. Modern philosophers of action argue further, however, that the sympathetic treatment of such real events makes the appeal to mental acts unnecessary.

It was Ludwig Wittgenstein (1889-1951), in particular, who had the aim of dislodging theoretical or cognitive acts from the preeminence they have enjoyed in post-Cartesian philosophy. [17] Deeper than any agreement in judgment, Wittgenstein insists, is agreement in habits and traditions. If mental acts exist at all, then they are a derivative phenomenon, owing whatever status they might have to their manifestations in overt behaviour.

It is indeed tempting to agree with Wittgenstein that the examination of overt expressions, and of all that is bound up therewith, will go some way toward making superfluous the direct investigation of the structures of acts, indeed that there is a a subservience of descriptions of mental episodes to descriptions of what is public or overt. Even then, however, it would be important to understand the precise nature of the ontological relations between mental acts and overt utterances, and an examination of Wittgenstein's work very soon reveals that — in marked contrast to Husserl — he simply does not have the theoretical resources available to establish what these relations might be. He was thereby constrained, like Frege before him, and like the formal semanticists whom he attacked, to adopt an unrealistic position to the effect that mental acts are somehow incidental epiphenomena, superfluous shadows, lacking in cognitive value or theoretical relevance.

Now there are, trivially, three alternatives regarding the dependence relations between mental acts and overt or public linguistic behaviour: (I) the former are one-sidedly dependent on the latter, (II) the latter is dependent on the former, (III) the two are mutually dependent on each other.

(I) is clearly unacceptable (one need only try to imagine what it would be like to have uses of language without mental acts); yet this seems to be what is involved in the extreme thesis to the effect that mental acts are merely derivative epiphenomena.

(II) implies the Cartesian thesis according to which language is dispensable (is a mere 'clothing of thought'). Consider Hans, who is alone in his room, thinking hard about whether or not Erna really loves him. Hans arrives at a number of conclusions which he considers, rejects, and so on. In Hans's judgments Erna occurs again and again, different predicates are attributed to her in succession, now in memory, now in imagination. Do we not have here a freedom of variation of Hans's mental acts with respect to the level of overt expression? Certainly what Hans *thinks* is independent of what he would *say* were he to communicate his judgments to, say, his brother Otto. But does this imply that language is a mere 'dispensable clothing'?

More careful consideration shows that Hans's thoughts are in fact only *locally* independent of linguistic utterances. All of these silent judgings are still *globally* dependent on language in the sense that they are of such a complexity that they could not occur unless language existed (unless the facility existed in Hans to use the expressions of a natural language and to manifest this facility in overt actions). It is this fact, also, which explains why there is a subservience of descriptions of mental episodes to descriptions of what is public or overt. [18]

Which leaves us with (III). Language is clearly dependent on thought, or rather on mental acts in general, since there can be no learning of language (and no communication at all) without e.g. the exercise of associated perceptions. And thought is also dependent on language in the (global) sense just mentioned. This two-sided dependence is first of all a developmental thesis: language cannot be learned except against a background which includes, e.g., acts of perception. But more: it seems that, beyond a certain threshold of complexity, mental acts cannot occur except against a simultaneously existing background which involves linguistic habits and skills which have been inculcated publicly (habits and skills which will of course manifest dependence relations of their own, on different levels). This gives rise to a further set of problems for an ontology of language, problems having to do with the relations between the mental and the social.

6. *Against Cartesianism*

The present paper, for all its talk of acts, is not an exercise in Husserlian phenomenology, i.e. in the description of those parts or moments of acts that are transparent to their subjects. Our use of 'act' differs essentially from the favoured use of the later Husserl, who

excludes from the notion of an act any 'extra-experiential' or 'non-phenomenolo-
gical' elements that may be connected with them. By an *act* Husserl means just that
component of an intentional event of consciousness that the subject himself can dis-
cern by 'reflecting' on his experience, excluding empirical facts about the intended
object and its *de facto* relation to the subject. Hence, an act is just what we might
call the 'experiential' component of an intentional event, 'purified' (as Husserl
says) of presumptions concerning its 'interlacing with nature' (Woodruff Smith &
McIntyre 1982: 3).

One principal thesis of the paper — which finds support both in the
realist critique of Husserl's transcendental phenomenology (as expressed
e.g. in the writings of Ingarden) and also in more recent work by analy-
tic philosophers on singular reference, indexicality, *de re* belief, *de re*
perception and the like (see e.g. Evans 1982 and Woodfield 1982) — is
that this Cartesian approach to the structures of acts is radically miscon-
ceived. Acts are simply one further variety of individual entity, existing
in the real world along with substances, processes, states and events of
other kinds. [19] Acts differ from most other real entities in the fact that
we can have *some* privileged or 'inner' access to them. But, this access is
(almost always?) partial. And the fact that it is available should not
blind us to the fact that, as real events in the spatio-temporal world,
acts are susceptible also to various sorts of objective or public access —
including access via our linguistic expressions — making possible a de-
scription of their ontological structure in a way which is no different, in
principle, from that which can be provided for entities of other sorts.

Cartesian assumptions remain powerful in contemporary philosophy
however, for example in the form in which they have been revived by
Fodor as the doctrine of 'methodological solipsism' (see Fodor 1981). It
will thus be useful to underline why it is that they lead their proponents
astray. Such assumptions may be summarised in the two-fold thesis to
the effect that

(i) each individual human consciousness has a privileged access to his
own mental phenomena;

(ii) the mental phenomena of each individual subject constitute a
self-contained domain, somehow effectively isolable from the order of
nature in such a way that our mental experience in its entirety would be
exactly as it is even though the external world did not exist.

The idea that each consciousness has a privileged access to his own
acts can be challenged on a number of fronts. It corresponds linguisti-
cally to the idea that mental verbs should be glossed as opaque in all oc-
currences of use (cf. Husserl 1984, §§ 4f.; Simons 1983). Yet the nor-
mal or unmarked sense of such verbs is transparent, the opaque sense
requiring a special setting, such as the report of a psychiatric patient or
dream-teller or vision-seer, this report and its evaluation being indepen-

dent of the existence or otherwise of a corresponding referent. (One such special setting is provided by the philosophical activity known as descriptive phenomenology.) Further, the opaque reading of a mental verb must be parasitic on the transparent reading: for when such a verb is interpreted in the opaque sense, the associated object-clause is read as giving an account of what the subject is aware of in the relevant experience indirectly: by seeming to give a description of an object, the transparent experience of which by a normal subject would involve him in having experiences relevantly similar to the subject in question.

The second component in the assumption of Cartesianism has been challenged above all by Wittgenstein. Wittgenstein rejects the idea that there is a discriminable totality of all of that to which the subject has 'inner' access on the grounds that our ability to find our way around the parts of such a totality would of necessity depend upon capacities acquired whilst moving in the domain of what is publicly accessible. There is no way, he insists, in which a self-contained stratum of 'consciousness' could be carved out from the plethora of forms of interaction, both active and passive, overt and covert, of a human being with its animate and inanimate environment. And from this it follows that any putative classifications of private objects must obscure at least some important structural traits of the phenomena to be described.

Both our mental life and our overt actions rest on expressed and unexpressed habits and traditions, acquired above all through education and upbringing and through our experiences of the actions of others (including actions of correction and constraint provoked by our own overt behaviour). It is this background of shared traditions which makes our mental life, and our own understanding of our mental life, possible. By shaping and determining our overt utterances it thereby indirectly shapes and determines the repertoire of types of act which we have at our disposal, and at the same time ensures that the deployment of this repertoire is to a large extent a matter of ingrained reflex — or at least a matter over which we have only very fragmentary conscious control. Thus even the mental acts which occur are not such that they admit of any transparent access.

It will be clear, again, that such Wittgensteinian arguments should not be seen as implying that there are no mental acts. Wittgenstein has shown only that a totality of mental acts cannot be separated out from its surroundings, and above all that such a totality cannot be separated out from the public domain constituted by the actions, and especially the speech actions, in which we engage. But what cannot be separated out, what does not exist independently of its surroundings, does not thereby lose its claim to exist. One of the presuppositions of Wittgenstein's

philosophy is precisely that there is no such thing as a dependent or non-separable existent. For if it made sense to distinguish between independent and dependent existents then it would make sense to talk of things having an *a priori* order, and this is something that Wittgenstein denies again and again throughout his work. [20]

7. *Husserl's Noema Theory of Meaning*

Sometime after the publication of the *Logical Investigations*, Husserl himself abandoned the theory of linguistic meaning as species and introduced a new view of meanings as special abstract entities, which he called *noemata*.

Anglo-Saxon readers of Husserl — indeed almost all his commentators — have interpreted his development from the *Investigations* to the *Ideas* in a way which takes for granted that the teleology which Husserl himself retrospectively inscribed upon his changes of mind — his 'development' — has some basis in the facts themselves. Thus it has been assumed that Husserl's rejection of the theory of meaning as *species* in favour of the theory of meaning as *noema* was somehow justified. This assumption seems, however, to be supported only by appeal to what Husserl himself has to say about the matter (after he has already given up the earlier position), and by the presence of a number of peripheral, if intriguing, similarities between the noema theory and the theory of *Sinne* developed by Frege in his "Über Sinn und Bedeutung". It is nevertheless interesting to spend some time examining the later theory, particularly in the refined form it has been given by Føllesdal, McIntyre and Woodruff Smith, since this may be said to combine many of the benefits of the language-based approach with a framework within which mental acts are capable of being taken seriously. [21]

On Husserl's earlier (species) theory, if Erna understands what Hans says, then this is because Hans's and Erna's thoughts are instances of the same species (at some level of generality), a fact which is itself to be understood in terms of certain kinds of constancy (similarity of parts) in the space of mental acts — constancy which has come about through a certain historical process (Hans and Erna share the same background of habits and skills). On the later (noema) theory no such historical account is possible, for we are dealing not with constancy amidst real variation, but with abstract meaning-entities outside space and time. Hans succeeds in communicating with Erna, on this account, because the meaning of his utterance, a certain abstract noematic *Sinn*, becomes the meaning of Erna's act of registering this utterance. It is as if the noema-

tic *Sinne* are stars in an abstract heaven to which our successive acts, and even the successive acts of distinct subjects, may — somehow — be identically directed.

So far, so Fregean.

Husserl's noema theory can be said to be superior to Frege's in at least one respect however. For Husserl provides an account of the noemata or *Sinne* of *all* acts: perceptual, imaginative, judgmental, etc., where Frege can cope only with judgmental acts, or more specifically with the language bound up with specific sorts of judgmental act. This is an important advantage, since if we want to deal, e.g., with indexical uses of language ('That bird is flying high'), we shall find it necessary to recognise that the relevant utterances can be meaningful only if they occur as parts of larger wholes which include acts of perception directed toward non-linguistic objects. [22] In this very advantage of Husserl's later theory lies a danger however. For the structure and individuation conditions of abstract noemata are essentially derived from our understanding of the logical structures of corresponding linguistic expressions. (This, surely, is the central message of the new 'Frege-Husserl semantics'.) If, therefore, we insist that abstract noemata are such as to exhaust the meanings also of perceptual acts, then we would seem to be trying to bring into coincidence two entirely different sorts of structure — having different sorts of multiplicity. For the structures of linguistic meanings are discrete, subject to those sorts of non-continuous variation which come about through the divisions and combinations dictated e.g. by the rules of syntax. The structures of perceptual contents, in contrast, are continuously variable along a number of qualitatively highly specific dimensions, in a way which implies that it is impossible that there could ever be a fitting together of the two of the sort that is required by the newly fashionable interpretations of Husserl's later theory.

The earlier theory, on the other hand, which draws a sharp line between the two sorts of content, is subject to no such danger. And in other respects, too, the comparison between Husserl's own successive theories of meaning is not at all to the disadvantage of the former. Indeed neither in Husserl, nor in contemporary proponents of the noema, is any argument given for favouring the later theory rather than the earlier. This is true not least because the earlier theory is not, in any of the secondary literature, worked out in detail. [23]

When Husserl's two successive theories are compared, we see a number of advantages of the former. This is so, first of all, in regard to their respective ontological commitments. Both theories accept the need for mental acts as real events (in the later theory these are called 'noeses'). Further, both accept the need for some account of generality. In-

deed the later theory distinguishes (and this is just for starters): the noe-
matic *Sinn* of an act, the matter of the act which 'entertains' this *Sinn*
(a certain real moment), the essence or species of this matter, and in
principle also the essence or species of the noematic *Sinn*. [24] The earlier
theory, in contrast, has only acts (certain real events), their parts, and
the species these instantiate, and we have seen that even the latter need
not, of necessity, be taken ontologically seriously.

Further, the relations of species to instance and of part to whole to
which the early theory appeals are well understood. The later theory, in
contrast, needs relations capable of embracing as their relata both ab-
stract and concrete entities (as if such heterogeneous entities could be ca-
pable of being combined together within a single whole). As Woodruff
Smith and McIntyre inadvertently reveal, [25] the intermediary role of ab-
stract noemata saddles us with two insoluble problems:

   (i) *the problem of entertaining*, i.e. the problem of the relation of the
noema to concrete mental episodes. (How can a real mental event exist
together with an abstract *noema/Sinn* within a single whole?)

   (ii) *the problem of anchorage*, i.e. the problem of the relation of the
noema to concrete objects. (How can a mental act, in somehow grasping
an abstract *noema*, thereby be directed or referred e.g. to a concrete
thing?)

   Woodruff Smith and McIntyre's own suggested solution to the first
of these two problems operates at the level of metaphor. An act, they
say,

> *intends* (is directed toward or is intentionally related to) an object if and only if the
> act (or its noesis) entertains a certain noematic *Sinn* and that *Sinn* prescribes that
> object (WS & M: 143).

But what is this 'entertaining', which appears to be a peculiar sort of
non-intentional intentionality? [26] It seems, indeed, that the word 'enter-
tains' can elucidate nothing. It merely recalls an exactly parallel problem
in the interpretation of Fregean philosophy, the problem of giving an
account of the relation of *Fassen* between an act of thinking and a Fre-
gean *Gedanke* (cf. Willard 1984: 180 ff.). [27] It is perhaps significant that
Woodruff Smith and McIntyre find no further analysis of entertaining
in Husserl's own writings. Rather than accepting this as sufficient evi-
dence of a major flaw, either in their interpretation of Husserl's theory
or in the theory itself — that perhaps a view of the relation between act
and meaning along the lines of the earlier theory might be right after all
— they take refuge behind a set-theoretical analysis of 'entertaining',
conceiving it as a 'many-one or functional relation' (WS & M: 146). But
the rigmarole of functions across possible worlds which they wheel forth

in order to support this view (cf. their chs. 6 and 7) yields (at best) nothing more than a rather shaky structural analogy; it does not tell us what the ontological status of these peculiar abstracta and of the associated relations might conceivably be.

In regard to the problem of anchorage, Husserl himself was ultimately to by-pass this problem by abandoning the attempt to establish contact between noema and world (the insidious pressure of the noema theory in the direction of 'transcendental idealism'). For it seems that the noema theory is unable to specify *which* objects acts are directed towards. Noemata are abstract entities (they are rather like the 'concepts' of old). In no sense are they tied up with or sensitive to the concrete and individual spatio-temporal entities which (as we normally conceive things) people the world of our experience. Thus the noema theorist has no way to distinguish, say, thinking-about-McIntyre from thinking-about-some-philosopher-qualitatively-indistinguishable-from-McIntyre. To succeed in describing a particular person's thinking-about-McIntyre (his being minded in just *this* way), we need to recognise that his acts, and their background, are tied to a certain segment of reality (that they are one-sidedly dependent upon certain objects, in the sense of our discussion above [28]).

Something similar holds even where there is no object of our act, e.g. where we are thinking (as we conceive things) about the god Jupiter. For here, too, there is a problem of anchorage: even our acts of thinking-about-Jupiter need to be distinguished from acts of thinking-about-some-god-qualitatively-identical-with-Jupiter, and to this end they must be tied into a certain complex background which includes ancient Mediterranean peoples, their religious beliefs, traditions and practices, and the remnants and reports which survive in various media and inform us of these. [29] This is another dimension in which Husserlian phenomenology is inadequate to the ontology of acts: it fails to do justice to this background, which exists in virtue of a network of foundation relations between any given act and the *objects* of prior acts with which it is associated.

The response of the noema-theorist is to seek to simulate this mundane background by complicating his account of the mutual interrelations among acts, by appealing to what is called the act's *horizon* (*Ideas* I § 149).

The clearest account of this matter is provided by Woodruff Smith and McIntyre in their ch. 5. Every act, they tell us, has a horizon, fixed by specific components of the act's *Sinn* together with parts of the subject's conceptual scheme or belief-system. Now it is of course reasonable to seek to extend the phenomenology of the act by recognising a role for

background beliefs, even those background beliefs that are not "active" phenomena of consciousness in the way the act itself is (WS & M: 254). We could see this background as somehow latent in an act, present in it "in the form of a *habitus*" (EU § 25, cf. also § 67b). The Husserl of 'horizons' and 'noemata' is not, however, operating with real events and states and with their real cumulation through time, nor with that background of knowledge that is actually acquired in our past experience. He is operating, rather, with peculiar non-actual dispositions. [30] Thus he sees an act's horizon as consisting of various *possible* acts, in which the object of the initial act would be intended under various further aspects, with details filled in about (say) those sides of the object that are originally hidden from view (WS & M: 239). The horizon of an act of perception, for example, would consist of perceptions the perceiver *could have had* in the past (and indeed in the future also) (WS & M: 259). The noematic *Sinne* of these merely possible components of the horizon are then held, *as if by magic*, to contribute to determining which object the act is directed towards:

> The complete 'meaning' of an individuative act, as we have described it, typically includes not only the *Sinn* that is actually and 'explicitly' present in the act,...but also the system of *Sinne* correlated with certain related background beliefs. A complete phenomenological analysis of the act must embrace those *Sinne* as well...because it is [they] that ultimately prescribe which individual the act is directed toward or is about. (WS & M: 390)

The problem of objective reference is hereby however shunted off into a corner of dark 'potentialities'. Not only is this appeal subject to the objection that it is an account of what is real in terms of what is merely possible. Even on its own terms it is not adequate to do the job which it has set itself: no account of the phenomenology of a person's acts, not even when the implicit or latent 'horizon' of these acts is taken into account, not even when their various 'sedimentations' are taken into account, can ensure for these acts the appropriate referent. For again, even the complicated horizonal background could in principle occur elsewhere, e.g. on Putnam's twin-earth. To anchor putative reference to 'our' Jupiter and his background as distinct from twin-Jupiter and his background we need an indispensable relational element, and this means breaking out of the phenomenological circle and taking the acts of the subject *in their natural setting*, intervolved in manifold ways with the rest of the natural world.

NOTES

1) I should like to thank the Alexander von Humboldt Stiftung for the award of a grant for research in Louvain and Erlangen where this paper was written. It owes a great deal to Kevin Mulligan, and grew out of a collaboration with him on the essays — Mulligan & Smith 1986a and 1986b — listed in the bibliography below. Thanks are due also to Karl Schuhmann for helpful comments.

2) Assuming, of course, that it has an object.

3) I shall concentrate in what follows on empirical uses of sentences in a natural setting, sentences for which it seems reasonable to assume that some truth-maker exists. See Mulligan, Simons & Smith 1984.

4) See especially pp. 20-27, 88-103 of Brentano 1982 and also Mulligan & Smith 1985 for a discussion in English.

5) See e.g. LU II § 3. The real parts in question are sometimes called by Brentano and Husserl 'logical parts': see Brentano 1982 (p. 20), Mulligan and Smith 1985, and LU III §§ 1f.

6) See also, more lately, Prior 1949 and Searle 1959. The fact that Husserl's understanding of logic and ontology and of form and matter rests on the assumption of the tree-structure of species is evident from his repeated discussions e.g. of lowest species and differentiae, of species and genera, of ideal singulars, etc. See e.g. LU "Prolegomena" §§ 46, 70; I §§ 31, 33; II § 26; III §§ 7a, 10f., 16, 22; IV § 7; V § 26. Compare also Husserl's letter to Lipps of Jan. 1904 (Schuhmann 1977), and Willard 1984 (e.g., p. 64). That this background of Aristotelian ontology was important to Husserl is clear also from the first chapter of the first book of the *Ideen* — and we can conjecture that he included this extensive treatment of the Aristotelian theory of generality precisely because he was concerned by the lack of understanding of his intentions in the earlier work.

7) Thus in LU III § 14 Husserl refers to "the great scientific interest that the constitution of a deductive theoretical transformation claims in every field". "Nothing can show up the value of an exact determination more clearly than the possibility of giving a deductive proof of *such propositions as are familiar to us* in a different guise." (Emphasis mine.) The theoretical interest of the idea of dependence derives also from the fact that, as Husserl has shown, it can contribute to the understanding of a range of other central formal ontological notions. The work of Ingarden (1964-65) suggests further that by distinguishing between different notions of dependence one can produce a theory of great power in the domain of general metaphysics.

8) See the works by Mulligan, Simons and Smith (and aggregates thereof) in the list of references below.

9) For references see Mel'čuk 1979, Schachter 1980.

10) See Mulligan (forthcoming b.) and also Smith 1986a and 1986b for further details.

11) On act-based theories of meaning in general and on Husserl's theory in particular see Smith 1986a.

12) This account applies strictly speaking only to what Husserl calls objectifying acts, but since all other acts — for example episodic emotional phenomena — are themselves one-sidedly founded on objectifying acts, the matter-quality-intuitive content distinction is in effect inherited by these also. Cf. LU V § 41.

13) Husserl's distinction between quality and matter had its origins in the distinction between *act, content*, and *object* first clearly formulated by Twardowski 1894. The opposition between the content and object of an act is in its turn often compared with Frege's opposition between the sense and reference of an expression. It is necessary to emphasise

already here, however, that the matter of an act as Husserl understands it in the LU cannot be equated with any abstract entity (e.g. with a 'proposition' or a *Sinn*). For act matters are real, individual parts of mental events; abstract entities, in contrast (if they exist at all), are outside space and time.

14) Compare the account of noticing put forward by Brentano (1982: 31-64; see also Wenning (forthcoming) and Stephens 1978: 138f). Clearly not *all* complexity in the object of perception is mirrored by a corresponding complexity of the act.

15) The 'roughly' is inserted here in order to draw attention to the fact that not all parts and moments of those concrete mental events through which uses of language get their meaning are relevant to this meaning. For further details see Smith 1986b.

16) Some philosophers have even gone so far as to impose a sentential form upon simple acts of perception (such that my seeing the on-coming fist is already a 'disguised judgment'): see Mulligan, Simons & Smith 1984. The view that perceiving is propositional is not an invention of analytic philosophers — there may be traces of the idea even in Hume and the first major attack on the idea is in Husserl's fifth Logical Investigation.

17) See also Russell's *Analysis of Mind*, where acts are dispensed with in a context which involves explicit reference to Brentano and Meinong.

18) This distinction between global and local independence, as also the arguments for its employment in this case, are due to Kevin Mulligan.

19) See Mulligan & Smith 1986b, for a more detailed elaboration of this thesis.

20) See, e.g., *Tractatus* 5.634, *Zettel*, § 357. The line of thinking in the present paragraph owes a lot to discussions with Kevin Mulligan.

21) I shall concentrate in what follows on Woodruff Smith and McIntyre's book of 1982 (abbreviated as WS & M). The book is an excellent example of Husserlian thought of the sort that has been sadly lacking since the heyday of phenomenology in the early years of the century, and I am grateful to its authors for useful discussions of its content. I hope that no apology is needed for the somewhat critical tone of my treatment, for I have of course passed over in silence those points in the book with which I am in agreement.

22) See Mulligan & Smith 1986a. It was above all Karl Bühler who developed Husserl's ideas in the direction of a general theory of indexicality: see Mulligan (forthcoming a.).

23) A single, noble exception to this general trend is the work of Dallas Willard, above all his 1972 and 1984. See also Hoche 1973 (p. 203), and Küng 1976, who give textual evidence that Husserl very belatedly entertained the view that his position at the time of the LU was possibly right after all.

24) For a fuller account — minus the dimension of essence or species — see the diagram on p. 136 of Woodruff Smith and McIntyre's book.

25) Cf. their diagram on p. 143.

26) Thus we are told for example that entertaining a *Sinn* 'does not require any explicit awareness of the *Sinn* by the subject who so entertains it' (p. 144).

27) The metaphor of entertaining recalls also the central weakness in once popular accounts of belief and other 'propositional attitudes' as a matter of a believer's being directed towards an abstract 'proposition'.

28) See Smith 1984 for a view along these lines.

29) I am grateful to Peter Simons for this point: see his 1983.

30) Woodruff Smith and McIntyre sometimes suggest further that these horizons are like noemata in being abstract entities, which would imply that they were entirely outside the temporal domain of what happens and is the case. I shall ignore this question here.

REFERENCES

Brentano, Franz. 1924-25. *Psychologie vom empirischen Standpunkt.* 2nd ed., 2 vols. Leipzig: Meiner. (Engl. transl., *Psychology from an Empirical Standpoint.* London: Routledge, 1973.)

——. 1982. *Deskriptive Psychologie.* Ed. by Roderick M. Chisholm & W. Baumgartner. Hamburg: Meiner.

Dreyfus, Hubert L. ed. 1982. *Husserl, Intentionality and Cognitive Science.* Cambridge, Mass.: MIT Press.

Eschbach, Achim ed. Forthcoming. *Karl Bühler's Theory of Language* (= *Viennese Heritage*, 2.) Amsterdam: John Benjamins.

Evans, Gareth. 1982. *The Varieties of Reference.* Ed. by John McDowell. Oxford: Clarendon.

Fodor, Jerry. 1981. "Methodological Solipsism as a Research Strategy in Cognitive Psychology". Dreyfus 1982. 277-303.

Hoche, H.-U. 1973. *Handlung, Bewußtsein und Leib.* Freiburg: Alber.

——. 1982. "Beziehungen zwischen der Semantik Freges und der Noematik Husserls". *Archiv für die Geschichte der Philosophie* 64. 166-97.

Holenstein, Elmar. 1976. *Roman Jakobson's Approach to Language: Phenomenological structuralism.* Bloomington & London: Indiana Univ. Press.

Hudson, Richard A. 1976. *Arguments for a Non-transformational Grammar.* Chicago & London: Univ. of Chicago Press.

——. 1984. *Word Grammar.* Oxford: Blackwell.

Husserl, Edmund. 1894. "Intentionale Gegenstände". Ms. first published in Husserl 1979, 303-48.

——. LU = 1900-01. *Logische Untersuchungen.* 1st ed. Halle: Niemeyer. 2nd ed. 1913-22. [Both editions repr. as *Husserliana*, XVIII, XIX.] (Engl. transl. of 2nd ed. by John Niemayer Findlay, *Logical Investigations.* London: Routledge, 1970.)

——. 1913. *Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie. I. Buch: Allgemeine Einführung in die Phänomenologie.* Halle: Niemeyer. [Repr. as *Husserliana*, III, 1.]

——. EU = 1947. *Erfahrung und Urteil: Untersuchungen zur Genealogie der Logik.* Hamburg: Claassen and Goverts. (Engl. transl., *Experience and Judgment* by J.S. Churchill and K. Ameriks. London: Routledge, 1973.)

——. 1979. *Aufsätze and Rezensionen 1890-1910.* Ed. by B. Rang. (= *Husserliana*, XXII.) Haag: Nijhoff.

Ingarden, Roman. 1964-65. *Der Streit um die Existenz der Welt.* 2 vols.,

the second in 2 parts. Tübingen: Niemeyer. Partial Engl. transl. of vol. I as *Time and Modes of Being.* Springfield: Thomas, 1964.

Küng, Guido. 1976. "Das Noema als reelles Moment". *Phenomenological Perspectives* ed. by P.J. Bossert, 151-53. The Hague: Nijhoff.

Mel'čuk, A.I. 1979. *Studies in Dependency Syntax* (Linguistica Extranea, 2) ed. by P.T. Roberge. Ann Arbor: Karoma.

Mulligan, Kevin. Forthcoming a. "On Bühler's Examples". Eschbach, forthcoming.

Mulligan, Kevin ed. Forthcoming b. *Speech Act and Sachverhalt. Reinach and the Foundations of Realist Phenomenology.* Dordrecht: Nijhoff.

Mulligan, Kevin, Simons, Peter M. & Smith, Barry. 1984. "Truth-Makers". *Philosophy and Phenomenological Research* 44. 287-321.

Mulligan, Kevin & Smith, Barry. 1985. "Franz Brentano and the Ontology of Mind". *Philosophy and Phenomenological Research*, 45, 627-44.

——. 1986a. "A Husserlian Theory of Indexicality", *Grazer Philosophische Studien*, 27 (forthcoming).

——. 1986b. "A Relational Theory of the Act", *Topoi*, forthcoming.

Prior, Arthur N. 1949. "Determinables, Determinates and Determinants". *Mind* 58. 1-20, 178-94.

Putnam, Hilary. 1975. "The Meaning of 'Meaning'". *Language, Mind and Knowledge* (=*Minnesota Studies in the Philosophy of Science*, 7). 131-93. (Repr. in Putnam, *Philosophical Papers*, vol. 2, *Mind, Language and Reality.* Cambridge: Cambridge Univ. Press 1975.)

Reinach, Adolf. 1913. "Die apriorischen Grundlagen des bürgerlichen Rechts". *Jahrbuch für Philosophie und phänomenologische Forschung* 1. 685-874. (=Reinach 1921, pp. 166-350.) (Engl. transl. by J.F. Crosby, "The A Priori Foundations of the Civil Law". *Aletheia* 3. 1-142 (1983).)

——. 1921. *Gesammelte Schriften.* Halle: Niemeyer. (New edition, ed. by Karl Schuhmann & Barry Smith, Munich: Philosophia, forthcoming.)

Russell, Bertrand. 1921. *The Analysis of Mind.* London: George Allen & Unwin.

Schachter, P. 1980. "Daughter-Dependency Grammar". *Current Approaches to Syntax* (=*Syntax and Semantics*, 13) ed. by E.A. Moravcsik and J.R. Wirth, 267-99. New York: Academic Press.

Schuhmann, Karl. 1977. "Ein Brief Husserls an Theodor Lipps". *Tijdschrift voor Philosophie* 39. 141-50.

Searle, John R. 1959. "Determinables and the Notion of Resemblance". *Proceedings of the Aristotelian Society*, Supplementary Volume 33. 141-58.

Simons, Peter M. 1983. "Contents and Objects". *Epistemology and Philosophy of Science* ed. by P. Weingartner and H. Czermak, 81-84. Vienna: Hölder-Pichler-Tempsky.

Smith, Barry. 1984. "Acta cum fundamentis in re". *Dialectica* 38. 157-78.

——. 1986a. "Materials Towards a History of Speech Act Theory". Eschbach, forthcoming.

——. 1986b. "Ten Conditions on a Theory of Speech Acts". *Theoretical Linguistics*, 11, 311-30 (issue dated 1984).

——. 1986c. "Logic and Formal Ontology". *Husserl: An Introductory Survey of His Thought* ed. by Jitendranath Mohanty & W. McKenna. Lanham: University Press of America.

Smith, Barry ed. 1982. *Parts and Moments: Studies in logic and formal ontology*. Munich: Philosophia.

Smith, Barry & Mulligan, Kevin. 1982. "Pieces of a Theory". Smith 1982. 15-109.

——. 1983. "Framework for Formal Ontology". *Topoi* 2. 73-85.

Stephens, J.W. 1978. *Phenomenology and Realism: An Essay on Husserl's "Logical Investigations"*. Diss. Univ. Princeton.

Stumpf, Carl. 1873. *Über den psychologischen Ursprung der Raumvorstellung*. Leipzig: Barth.

Twardowski, Kazimierz. 1894. *Zur Lehre vom Inhalt and Gegenstand der Vorstellung: Eine psychologische Untersuchung*. Vienna: Hölder. (Repr. Munich: Philosophia, 1983. Engl. transl. *On the Content and Object of Presentations*, by R. Grossmann. Haag: Nijhoff, 1977.)

Wenning, W. Forthcoming. "Remarks on Marty on Colour". *Mind, Meaning and Metaphysics: The philosophy and theory of language of Anton Marty* ed. by Kevin Mulligan. Dordrecht: Nijhoff.

Willard, Dallas. 1972. "The Paradox of Logical Psychologism: Husserl's Way Out". *American Philosophical Quarterly* 19. 94-100. (Repr. in *Husserl: Expositions and appraisals*. ed. by F. Elliston and P. McCormick, 10-17. Notre Dame: Univ. of Notre Dame Press, 1977.)

——. 1984. *Logic and the Objectivity of Knowledge: A study on Husserl's early philosophy*. Athens, Ohio: Ohio Univ. Press.

Woodfield, Andrew ed. 1982. *Thought and Object: Essays on intentionality*. Oxford: Clarendon.

Woodruff Smith, D. & McIntyre, R. 1982. *Husserl and Intentionality*. Dordrecht: Reidel.

STRATEGIES IN UNIVERSAL GRAMMAR:
THE CASE OF MEANING POSTULATES
IN CLASSICAL MONTAGUE GRAMMAR

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Transitive verbs *find* and *seek* are treated, within classical Montague Grammar, as functors that, when combined with a noun phrase, give as their values 'intransitive' verb phrases *seek NP* and *find NP*, and are assigned to category TV = IV/T, that is to category [(t/e)/(t/t/e)]. Being noun phrases associated with category [t/(t/e)], in subject-verb phrase combinations noun phrases turn out to be functors, and intransitive verb phrases arguments.

Grammar introduces a function, whose domain is the set of categories and whose values are in the set of types, such that $f(e) = e$, $f(t) = t$, $f(A/B) = \langle \langle s, f(B) \rangle, f(A) \rangle$, where A and B are any categories. Intuitively, types could be considered as '*semantic categories*' that function f makes correspond to syntactic ones, or as labels on classes of denotations: the set of types is the smallest set such that e and t are types (respectively, entities and truth values), and, if α and β are types, $\langle \beta, \alpha \rangle$ is a type (the type of functions from β to α) and $\langle s, \alpha \rangle$ is a type (the type of senses of α). Function f determines a unique type associated with an expression of a given category: transitive verbs *seek* and *find* are therefore associated with type $\langle \langle s, \langle \langle s, \langle \langle s, e \rangle, t \rangle \rangle, t \rangle \rangle, \langle \langle s, e \rangle, t \rangle \rangle$, that is, with the type of functions from types of intensions of noun phrases (properties of properties of individual concepts) to types of extensions of intransitive verb phrases (sets of individual concepts). A general device, that is, a set of conditions upon which grammar is built, associates each category with one and only one type, being the type the value of function f for the given category as argument. As types are sorts of labels on classes of denotations, interpretation satisfies a strong condition of compositionality as concerns the relation between rules of syntactic construction and rules of semantic interpretation: categories of syntactic construction *and* function f jointly determine the type structure of the interpretation, while order

of rule application and operations performed by rules determine which semantic objects — of the type determined by the type structure — are assigned to syntactic constituents.

A rule of syntax is a sequence:

$\langle F_\gamma, \langle \delta_\xi \rangle_{\xi < \beta}, \epsilon \rangle$ where β is the number of places of operation F_γ, $\delta \in \Delta$, $\epsilon \in \Delta$, that is:

$\langle F_\gamma, \langle cat_o, ..., cat_{m-1} \rangle, cat_m \rangle$.

F_γ is a m-place operation, cat_i belongs to set Δ of categories for every i, and represents a categorial restriction on the functioning of operation F_γ, cat_o, ..., cat_{m-1} are the arguments of the operation, cat_m the value. As there are no conditions upon their *form*, *operations* can perform a variety of linguistic work, within the constraints imposed by the categorial conditions on their functioning. It is worth pointing out that classical Montague Grammar generates phrases rule by rule from the bottom up, as the basic clause of the recursion that determines the language is the syntactic rule:

$B_A \subseteq P_A$, for any category A;

that is, the set of basic expression of any category A is included in the set of phrases of category A.

Type assignment, in classical Montague Grammar, is governed by a strongly restricted device, which nevertheless permits interpretive rules to diverge to some extent from rules of syntactic construction. The system of grammar does not determine *which* operation (or composition of operations) occurs in the semantic rule in correspondence to the operation occurring in the syntactic rule: grammar just determines in full generality which type must be associated with the semantic object built up by the operation.

Semantic rules can be given in either of the following two forms: as rules of direct interpretation of syntactic constituents, or as rules of translation into an intermediate *logical* language, which is given direct model theoretical interpretation. Although the two procedures are proved to be strictly equivalent in Montague Grammar, the step of construction of the intermediate language permits to formulate explicit conditions on the relation between syntactic construction and semantic interpretation as conditions on the relation between rules of syntax and rules of translation into the intermediate language. Translations are compositional, in the sense that rules of translation, operating on translations of constituents of syntactic rules, build up the translation of the constituents constructed by the syntactic rule itself, according to the following pattern:

if α is a member of cat_k, β is a member of cat_j, α and β translate as α', β', then $F_n(\alpha, \beta)$ translates as $F_n'(\alpha', \beta')$.

The relation between rules of syntax and rules of interpretation is constrained by the condition that each syntactic rule should have one and only one corresponding rule of translation. Rules of translation are constrained by the condition that the rule should apply its ('semantic') operation on the translations of the constituents occurring as arguments in the syntactic rule; the value of the ('semantic') operation is the translation of the constituent built up by the syntactic rule.

Grammar as a system cannot be made sensitive to differences ('meaning' differences, in some sense), originating *below* the categorial level, between constituents of the *same* syntactic category, but requiring differences in semantic types: for instance, lexical differences between *seek* and *find*, being *seek* intensional in the position of the direct object, while *find* is extensional in the same position, cannot be described within the system of grammar as such. This divergence between structural and lexical properties of constituents is expressed by the fact that, while the *head type* assigned to transitive verbs by the system of grammar coincides, in the case of *seek*, with its *lexical type* (as concerns the position of the direct object), in the case of *find* it does *not* coincide with its lexical type. Being *heads* of constructions belonging to grammatical category $IV = TV + T = IV/T + T$, transitive verbs are bound, in the system of classical Montague Grammar, to be included in the $(e/t/(t/t/e))$ category, which function f from categories into types $(f(A/B) = \langle \langle s, f(B) \rangle, f(A) \rangle)$ maps into type $\langle \langle s, \langle \langle s, \langle \langle s, e \rangle, t \rangle \rangle, t \rangle \rangle, \langle \langle s, e \rangle, t \rangle \rangle$: this type is what could be called the *head type*. *Lexical types* are a description of lexical properties of expressions such as extensionality or intensionality of specific positions (subject, object, etc.), properties of control, etc.: divergencies between head and lexical types are a relevant problem which pertains to the theory of grammar.

In regard to lexical properties, the convenient type assignement to *find* would be $\langle e, \langle e, t \rangle \rangle$, that is, the type of extensional functions from individuals (as extensions of individual constants) to sets of individuals (as extensions of predicates), instead of the *head type* $\langle \langle s, \langle \langle s, \langle \langle s, e \rangle, t \rangle \rangle, t \rangle \rangle, \langle \langle s, e \rangle, t \rangle \rangle$. Furthermore, the semantic type assigned to *find* by the most *straightforward* correspondence between categories and type — according to which derived category α/β would be mapped into type $\langle \beta, \alpha \rangle$ (with no 'intensional' types) — would be $\langle \langle \langle e, t \rangle, t \rangle, \langle e, t \rangle \rangle$. 'Straightforward correspondence' in what sense? The set of categories can be described as the smallest set such that, if e and t are distinct, e and t are categories, and, when α and β are categories, α/β is a catego-

ry, the category of functions from β to α. If the set of types if analogously constructed as the smallest set such that, if e and t are distinct, e and t are types, and, when γ and δ are types, $\langle \gamma, \delta \rangle$ is a type, the type of functions from γ to δ, a natural way to construct the relation between categories and types would be to define function f from categories into types as follows:

$$f(e) = e; \quad f(t) = t; \quad f(\alpha/\beta) = \langle \beta, \alpha \rangle.$$

Function f from categories into types would then constitute the most straightforward and strongest condition on the relation between categories and types, in the sense that the structure of types would mirror exactly the structure of categories: not only in the sense that one and only one type would correspond to each category, but also in the further sense that, for each *operation* on categories, there would correspond one single *operation* on types. Such a strong condition would have the effect, within the system of grammar, of severely constraining the relation between syntactic operations and *semantic* operations. If the system of grammar associates one simple *semantic* (ambiguous between translation and direct interpretation) operation with each syntactic one, it would *not* be possible to associate with a syntactic operation (for instance, functional application, α/β and β) a composition of *semantic* operations (for instance, $\langle \langle s, f(\beta) \rangle, f(\alpha) \rangle$, and $\langle s, f(\beta) \rangle$: a minimal device needed to accomodate intensional constructions). The strongest and most straightforward condition on the relation between categories and types seems adequate with respect to languages which are poor in descriptive lexical apparatus (classical propositional and predicate logics, for instance), and in which non extensional operators do not occurr. But, in general, it seems more convenient to impose weaker conditions upon the relation between categories and types, and to associate with categories semantic types able to express the relative *divergence* between syntactic and semantic structure: a device especially needed when formal grammar has to accomodate constructions occurring in languages with a rich descriptive lexical apparatus and in which non extensional operators occurr.

The system of grammar that assigns the intensional *head type* to *find* and *seek* satisfies therefore a weaker condition upon the relation between categories and types. The weaker condition permits semantic interpretation (or translation into the intermediate language) — in the *rule by rule* procedure of interpretation (translation) which characterizes classical Montague Grammar — to associate with syntactic constituents built up by syntactic rules, semantic objects (translations) having the degree of complexity needed to govern non extensional dependencies. Type as-

signments based on the straightforward correspondence between categories and types would, in their turn, produce a symmetrical divergence as concerns lexical and structural properties of *seek*, since the extensional type would not give *seek* a semantic object capable of matching the non extensional nature of its lexical properties.

The system of Universal Grammar in classical Montague Grammar governs the relations between rules of syntax and rules of translation or interpretation through the following parameters (respectively, free parameters/their values in classical Montague Grammars):

i. relation rule-rule/one to one correspondence

ii. relation operation-operation/one to many correspondence

iii. relation categories-types/different degrees of weakening of the correspondence, within the constraint according to which types of formulas must be truth values.

Weakenings of conditions on the relation between syntactic operations and operations of the intermediate language (of the interpretation) and on the relation between categories and types make it possible that rules of translation (interpretation) perform linguistic interpretive work which is not directly determined by syntactic and categorial structures: the degree of divergence allowed by the system of grammar between syntactic and categorial structures and the structure of the intermediate language (interpretation) is expressed in the way grammar builds up the relation between categories and types and the relation between operations of syntax and operations of the translation (interpretation). The null degree of divergence is expressed by the straightforward condition according to which category α/β corresponds to type $\langle \beta, \alpha \rangle$: there being no divergence between categorial and type structure, syntactic construction directly determines the structure of the interpretation. Since classical Montague Grammars are devices that directly generate surface structure, a consequence of the straightforward (strongest) condition is that surface structure and syntactic construction (sequences of applications of rules) determine the structure of the interpretation. The straightforward condition is obviously too strong in the case of languages with relevant descriptive lexical apparatus. Interpretive (translation) rules must perform, when applied to the syntactic construction tree, a certain amount of logical linguistic work of reconstruction in order to provide, so to say, that part of semantic information which does not show up neither in surface structure nor in syntactic construction. Descriptively rich languages can be roughly characterized as those languages where lexicon contains a large variety of descriptive basic expressions (besides logical operators, etc.) that exhibit certain linguistic properties which cannot be

fully described solely in terms of properties of the syntactic categories they belong to (as in the case of *seek* and *find* with respect to semantic properties of direct object position). Some descriptively rich languages seem to regularly exhibit, for instance, a sort of divergence between syntactic structure and interpretive structure that depends upon the fact that such languages build up nonextensional constructions. The device introduced in classical Montague Grammar in order to deal with this class of linguistic phenomena consists in complicating the structure of types, allowing that, for each type α, there is a type $\langle s, \alpha \rangle$, the type of senses of α. Within the system of grammar, the degree of divergence between syntax and interpretation (translation) that some class of intensional phenomena engender can be governed in a general manner by weakening the conditions on the relation between categories and types, that is, by defining function f in such a way that:

$$f(\alpha/\beta) = \langle \langle s, f(\beta) \rangle, f(\alpha) \rangle.$$

Compositions of interpretive (translation) operations in correspondence to single syntactic operations, together with a weakened condition upon the relation between categories and types implicitly express the degree of weakening of the correspondence between syntactic construction and interpretive (translation) construction allowed by the system of grammar: and, in its own way, function f expresses to what degree rules of translation (interpretation) are allowed to perform work of logical reconstruction.

Given the fact that classical Montague Grammar requires translations into the intermediate language to be strictly equivalent to direct model theoretical interpretations (Tarski-style), and since model theoretical interpretation is a (rule by rule) assignment of semantic objects to syntactic constituents, there follows that work of logical reconstruction *cannot be an uneliminable level of structure or linguistic representation*: it must be possible to convert logical reconstruction into a direct rule-by-rule model theoretical interpretation applied to syntactic construction. This very strong constraint upon the system of grammar can be considered as the most characteristic feature of formal grammars, according to classical Montague Grammar.

Should the system of grammar allow operations, in which the *same categories* occur, to translate into operations in which *different types* occurr, grammar would not satisfy the condition of strict equivalence of translation and interpretation: translation indeed would perform uneliminable work of logical reconstruction, i.e. would construct semantic objects, in correspondence to given syntactic constructs, that could not have been constructed by a direct rule-by-rule model theoretical interpre-

tation of syntactic constituents, given the obvious fact that interpretations assign denotations of the same type to constituents of the same category.

Should instead grammar weaken the strong conditions on the correspondence between rules of syntax and rules of translation, interpretive rules would perform work of reconstruction that would not be equivalent to direct interpretations. Interpretations of constituents would not be applied to their syntactic construction trees (equivalently, to sequences of syntactic rules), but to a *level of linguistic representation* of the structure of their meaning, that is, to a level which would be totally separated (unrelated) with respect to the procedure of syntactic construction of the constituent itself. Along this way, the system of grammar would not therefore satisfy the least Tarski-style compositionality conditions on formal interpretations.

Let's return now to our transitive verbs *find* and *seek* and let's consider their subject positions: both verbs share the lexical property of constructing *extensionally* their subject positions, while the system of grammar determines a type assignement which would be convenient were the positions intensional. A lexical type that would express lexical properties of *seek* would be:

$$\langle \langle s, \langle \langle s, \langle \langle s, e \rangle, t \rangle \rangle, t \rangle \rangle, \langle e, t \rangle \rangle$$

but such a type cannot be assigned by the system of classical Montague Grammar. Divergences between *head* and *lexical* types are systematic, due to the fact that most lexical linguistic properties originate *below*, so to say, the categorial level, in the sense that they cannot be fully described in categorial terms: for instance, properties holding only for members of subsets of the set of expressions belonging to a given category. Linguistic properties of such a sort express mechanisms of composition (mostly, of a semantic kind) that are neither described nor describable in the categorial system and produce subcategorial or transcategorial differences with respect to which rules and operations within the system of grammar have no sensitivity, given the strong conditions governing the relation between categories and types.

Divergences and gaps between head and lexical types could be saturated — even within the system of strong conditions upon the relation between categories and types — if verbs *find* and *seek* were assigned to different syntactic categories, so that the different lexical properties were determined, within the system of grammar, by a difference in structural properties. When adapted in this manner, the system of grammar would then be unable to account for generalizations concerning the parallel dis-

tribution of the two verbs in all their syntactic contexts, and would construct as categorial differences lexical properties of a subcategorial or semantic kind. If, on the other side, the conditions upon the relation between categories and types were radically weakened, the system of grammar could associate different semantic types to single syntactic categories. There are two ways to weaken the conditions:

a. Rules of syntax are made sensitive to lexical features, in such a way that each rule dominates only lexical material that fits the syntactic contexts constructed by the rule, and one and only one semantic rule corresponds to each syntactic one. A strong condition governs the relation between syntactic and semantic rules, while the relation between categorial structure described by the syntactic rule and type structure described by the semantic rule is not subjected to systematic strong constraints: semantic rules can perform work of reconstruction. A set of general conditions upon the degree of reconstruction work permitted by grammar might occurr in the system of grammar.

b. Semantic interpretation performs work of reconstruction without constraints, assigning each syntactic constituent a semantic object that fits the lexical properties of its head, in such a way that the logical nature of the semantic object is *not* determined by the categories and by the function from categories into types.

While the weakening of conditions escribed in a. is compatible with forms of grammar that satisfy a weaker compositionality constraint, b. represents a form of grammar for which conditions of compositionality (with respect to relations between syntax and interpretation) do not hold. In any case, neither a. nor b. are strictly compatible with the classical forms of formal grammars, where strong general conditions upon the relation between categories and types determine a strictly compositional interpretation. Within classical formal grammars, these general conditions on interpretations provide *the* device that directly determines *specific* assignments of types, and consequently of semantic objects, to constituents. Intensional semantics is indeed a generalization of the structure of extensional model theoretical semantics, where intensions are those functions on indices that, when applied to a given index, give extensions with respect to that index. Function f from categories to types is defined, in classical formal grammars, in such a way that *each* category is associated with *the* semantic type which should fit the *most general degree of semantic complexity* that a constituent of the given category might have. This implies that members of the class of transitive verbs be associated with semantic objects of a type *having the intensional complexity needed to fit the most intensionally complex members* of that class of verbs: since intensions are more general than extensions,

such a procedure — which results in assigning constituents the highest degree of intensional complexity needed in general by the constructions — provides, after all, a tolerable and harmless assignment of semantic objects even in the less complex cases. The system of assignments is consistent, even if lifted, in a sense, a few levels higher than it would be necessary in many cases: *find* is one of these cases.

Classical formal grammars need therefore *general devices* which should permit to reduce intensional complexity, where the construction allows lower complexity, and to maintain, at the same time, strong conditions on the relations between categories and types: for instance, *conditions on interpretations* which select a subset of the set of logically possible interpretations, the set of *intended interpretations*. Such a sort of conditions on interpretations are called *meaning postulates*.

Let's consider again the case of *seek* and *find*: being their categorial structure $(t/\beta/\alpha)$, they belong to the class of expressions that, when combined with expressions of categorial structure α, give rise to constituents of categorial structure t/β. *Seek* and *find* do not agree — in terms of lexical properties — for what concerns the values of the type variables associated with categorial variables α and β. Expressions having categorial structure $(t/\beta/\alpha)$ are of the sort $(\gamma \; (\_\!\_{\beta}) \; (\_\!\_{\alpha}))$ — where γ is $(t/\beta/\alpha)$, β and α are the arguments — and denote binary relations $\delta \; (\_\!\_{\varphi}, \; \_\!\_{\psi})$. So, in regard to subject and direct object positions of *find*, the problem is just how to *reduce* the intensional complexity of the associated relation: that is, how to perform, in a sense, *vertical* reduction, since the reduced relation would have a lower level type structure, with respect to the unreduced one.

Such a reduction can be performed by imposing the following condition on *intended* interpretations:

(MP) $\vee S \wedge x \wedge \Re \; \square \; [\delta \; (x, \; \Re) \longleftrightarrow \Re \; \{\hat{y} \; S \; \{^{\vee}x, \; ^{\vee}y\}\}]$

where δ belongs to type $\langle\langle s, \; \langle\langle s, \; \langle\langle s, e\rangle, \; t\rangle\rangle, \; t\rangle\rangle, \; \langle\langle s, e\rangle, \; t\rangle\rangle$ and translates *find*, x to type $\langle s, e\rangle$, $\Re$ to type $\langle s, \; \langle\langle s, \; \langle\langle s, e\rangle, \; t\rangle\rangle, \; t\rangle\rangle$, S to type $\langle s, \; \langle e, \; \langle e, t\rangle\rangle\rangle$ and S $\{^{\vee}x, \; ^{\vee}y\}$ is the expression $^{\vee}S \; (^{\vee}x, \; ^{\vee}y)$, which says that objects of type e denoted by $^{\vee}x$ and $^{\vee}y$ are in the relation-in-intension S. Given the expression $\delta \; (x, \; ^{\wedge}\lambda PP \; \{y\})$ — where δ denotes a relation between individual concepts and properties of properties of individual concepts —, by abstracting on the involved variables we get $\lambda v \lambda u \delta$ $((^{\wedge}u) \; (^{\wedge}\lambda PP \; \{^{\wedge}v\}))$ which denotes the relation between individuals (u and v are of type e) that corresponds to the relation denoted by δ.

If we name δ_{*} the expression $\lambda v \lambda u \; \delta \; ((^{\wedge}u) \; (^{\wedge}\lambda PP \; \{^{\wedge}v\}))$, formula:

(A) $\square \; [\delta \; (x, \; \Re) \longleftrightarrow \Re \; \{\hat{y} \; \delta_{*} \; (^{\vee}x, \; ^{\vee}y)\}]$

(where δ translates *find* and δ_* is $^\vee$S, that is *find$_*$*) is a logical consequence of the meaning postulate (MP), and is true with respect to every index in every intended interpretation.

Logical truth (in *intended* interpretations) of formula (A) permits to derive — through steps of lambda conversion and ordinary logical machinery applied to translations into the intermediate language — the following extensional fist order reduction for transitive verb *find* (in the context: *find'* ($\_\varphi$, $\_\psi$)):

$$\textit{find}' \ (^\wedge k, \ ^\wedge\lambda PP\ \{^\wedge j\})$$
$$(^\wedge\lambda PP\ \{^\wedge j\})\ \{^\wedge\lambda y\ \textit{find}'_*\ (^{\vee\wedge}k, \ ^\vee y)\}$$
$$^\wedge\lambda\ y\ \textit{find}'_*\ (k, \ ^\vee y)\ \{^\wedge j\}$$
$$\lambda\ y\ \textit{find}'_*\ (k, \ ^\vee y)\ (^\wedge j)$$
$$\textit{find}'_*\ (k, \ ^{\vee\wedge}j)$$
$$\textit{find}'_*\ (k, \ j)$$

Find'$_*$ belongs to type $\langle e, \langle e, t\rangle\rangle$, indeed.

The meaning postulate — or condition on interpretations — which permits the *vertical* reduction (or reducibility) of the type complexity of the relation associated with the transitive verb *find*, should apply only to that class of verbs which are extensional both in subject and direct object position. This sort of postulate could therefore be considered as a systematic means to fill out gaps, produced by the system of grammar, between structural and lexical properties.

Those verbs, on the other hand, which are extensional in subject position and *non extensional* in direct object position — the *seek* class of verbs — are constructed, within the system of grammar, as expressions that denote a relation between individual concepts and properties of properties of individual concepts. The divergence can be saturated by a condition on *intended* interpretations, according to which:

$$\wedge\ \Re\ \vee\ M\ \wedge\ x\ \square\ [\delta\ (x, \ \Re) \longleftrightarrow M\ \{^\vee x\}]$$

where M belongs to type $\langle s, \langle e, t\rangle\rangle$, $^\vee x$ to type e, and $M\ \{^\vee x\}$ is $^\vee M$ ($^\vee x$).

Meaning postulates, within classical Montague Grammar, mostly accomplish work of vertical reduction of the type complexity determined by the system of grammar, except for the postulate that, decomposing *seek* into *try to find*:

$$\square\ [\textit{seek}'\ (x, \ \Re) \longleftrightarrow \textit{try to}'\ (x, \ ^\wedge[\textit{find}'\ (\Re)])]$$

should permit to represent in the intermediate language instances (which would be hard to represent without the step of lexical decomposition) of quantifier scope differences.

This last sort of postulate — which establishes meaning relations between logically independent descriptive constants of the language — describes semantic relations between expressions that the system of grammar could not otherwise express. While postulates which vertically reduce type complexity permit to fill out gaps and divergences that are created by the fact that the system of grammar *overgenerates* structure, the *decompositional* postulates can be characterized as a systematic device to correct some effects of *undergeneration*. Grammar has no way to describe, within the system, relations that occur fully outside of the categorial and type levels: *decompositional* postulates are those conditions on interpretations that determine relations between descriptive constants of the language in the class of intended interpretations, without any cost (i.e., change) for the system of grammar.

Meaning postulates that have this character are analogous, in a sense, to *Carnap-style* postulates, since they fix conditions on interpretations in such a way that, within intended interpretations, certain meaning relations between otherwise unrelated descriptive constants hold: what results is a combination of the method of setting conditions upon descriptive constants and of the method of lexical decomposition of some of these constants into constants (supposedly, primitive) of the logical language, which receive independent semantic interpretations. Within this procedure, work of reconstruction is systematically performed either by sets of formulas of the intermediate language (the outcome of translation and lexical decomposition) or by sets of conditions on direct interpretations, both reducing the set of logically possible interpretations to its proper subset of intended ones.

It must be stressed that meaning postulates of this second sort *do not* operate towards filling out divergences between type structure determined by the system of grammar and lexical properties. They rather attempt to describe lexical properties which occur *outside of* categorial and type levels and engender logical semantic relations between descriptive constants, which could not be described by means of categorial and type structure: either meaning relations between lexical elements of the same category, or lexical semantic properties of expressions which could be expressed only if we introduced *distinctions* in semantic interpretation which further partition the sets of possible denotations determined by the type structure.

With respect to the system of grammar and to the conditions on the relation between lexicon, syntactic construction and semantic interpretation, meaning postulates constitute a most conservative manner to fill out gaps between descriptive lexical variety and syntactic or semantic combinatorial devices. No modifications are introduced into the system

of grammar, which either overgenerates or undergenerates structure, according to the construction involved: general conditions on interpretations either introduce the missing semantic information, in the case of undergeneration, or fill out gaps and divergences through reduction of type complexity, in the case of overgeneration.

To summarize: the system of grammar in general either overgenerates or undergenerates structure with respect to lexical properties, since it determines assignments of categories and types which do not fully describe *nongenerical* properties of lexical elements or *nongenerical* relations between lexical elements. A variety of devices are available for grammar to fill out divergences between structural and lexical properties, having these devices different *systematic costs* with respect to the organization of grammar.

a. If we allow a certain degree of *weakening* of the conditions upon the relation between syntactic construction and semantic interpretation, with regard either to the relations among rules, or among operations, or between categories and types, semantic rules would perform a certain amount of work of reconstruction which would either complete the incomplete semantic information provided though syntax, or would saturate divergences between structural and lexical properties. Syntactic construction would then determine only in part semantic interpretation, the strongest form of compositionality between syntactic construction and semantic interpretation would be weakened to some degree: but the work of reconstruction performed by semantic rules (either directly or through the rule of translation into an intermediate language) would permit to describe significant linguistic generalizations.

b. If the system of grammar is not affected by any modification, divergences between structural and lexical properties can be mended by means of conditions on interpretations: we allow grammar to overgenerate or undergenerate structure, but we restrict the set of interpretations to a proper subset such that, with respect to it, the interpretations of certain descriptive constants satisfy their lexical properties.

Procedure a. introduces, within the set of rules and conditions which constitute the system of grammar, a device that, in order to accomodate work of reconstruction, pays the cost of a systematic divergence between syntactic construction and interpretation: to a single step of syntactic construction, there might correspond several applications of semantic operations (compositions of operations), and the semantic type of the entity associated with a syntactic constituent weakly corresponds to the category of the constituent. When grammar makes wide and unrestricted use of procedure a., it is, so to say, necessary to know more than the syntactic categorial structure and the function from categories into types

in order to know the structure of meaning, since the system of corre-
spondences between steps of syntactic construction and steps of interpre-
tive construction is radically weakened.

Within procedure b., categorial structure and function from catego-
ries into types fully determine the *general structure* of meaning, since the
system of grammar is not modified to incorporate — as in procedure a.
— lexical properties within its system of rules and conditions. Work of
recomposition between structural and lexical properties *is not performed
by work of reconstruction operated by rules of grammar*: instead, proce-
dure b. pays the *high descriptive cost* of introducing individual meaning
postulates which govern either single descriptive expressions or classes of
them. It is worth noticing that classical Montague Formal Grammars —
being more oriented towards the description of the formal properties of
the system of grammar — use, more often but not only, the method of
meaning postulates, while those formal grammars that are more oriented
towards systematic description of a variety of linguistic processes, prefer
to weaken the degree of rigidity of the formal system of grammar.

The set of constraint on form and functioning of rules, and upon the
relations between rules, between operations, and between categories and
types have among their consequences that classical Montague Grammars
satisfy a strong condition of compositionality with respect to syntactic
construction, with respect to translation or interpretation, and a strong
condition of *parallel compositionality* of syntax and interpretation (or
translation): but there are indeed various strong forms of the condition
of compositionality, as there are various forms of its weakening, and
these different forms determine different sorts of grammar.

Since the strongest form of compositionality requires a one-to-one
correspondence between rules *and between operations*, the unique type
$\langle \beta, \alpha \rangle$ would correspond to derived category α/β: as categorial structure
determines directly the structure of the interpretation, no work of recon-
struction performed by interpretive rules is permitted. A slight weaken-
ing of the conditions on compositionality within a system of grammar
that satisfies a strong form of the principle would make a limited
amount of work of reconstruction possible: one-to-many correspondence
among the *operations*, and a consequent weakened form of correspon-
dence between categories and types.

Weak forms of the principle of compositionality and weak conditions
on compositionality determine systems of grammar in which work of re-
construction can be performed by interpretive rules to a high degree.
Grammars generating descriptively rich languages most frequently show
a systematic divergence between the type that a lexical expression would

be associated with on the basis of the type-category strong or weak cor-
respondence (what we have previously called *head type*) and the type that
would express the lexical properties (which frequently are determined
below the category-type level) of the expression itself (what we have
called *lexical type*): as an example, pairs of expressions belonging to the
same category, and which nevertheless possess semantic properties that
would be described if the expressions were assigned to different types,
frequently occur in descriptively rich languages. But, assigning different
types to expressions of the same category would require a high degree of
weakening of the conditions on the relation between categories and types,
and would have as one of its consequences that the system of gram-
mar would no longer satisfy a strong form of the principle of composi-
tionality. Interpretive rules (or translation rules) would, in this case, per-
form work of reconstruction which would not be eliminable (as a matter
of principle) in favor of a direct model theoretical interpretation applied
to syntactic construction — the application being based, as usual in mod-
el theoretical *Tarski-style* semantics, on a strict correspondence between
categories and types, such that each category is associated with one and
only one type —: as a consequence, the interpretation applied upon the
linguistic expression that is the outcome of the work of reconstruction
would not in general be strictly equivalent to a model theoretical inter-
pretation directly applied to syntactic construction. From the point of
view of compositionality, the situation, within these weaker forms of
formal grammar, is as follows: the interpretation of an expression still is
a function of the interpretations of its immediate constituents and of the
mode of construction (that is, interpretation is strictly compositional
within an interpretive (or translation) component), but the relation be-
tween syntactic construction and interpretation is not constrained by
strong conditions on the correspondence between categories and types
(that is, a strong condition of *parallel* compositionality between syntactic
construction and interpretation would not be satisfied).

The weakest forms of condition upon the relation between syntactic
construction and interpretation — and, consequently, the highest degree
of weakening of the condition of *parallel* compositionality — are repre-
sented by the systems of grammar that provide *structures* or *levels of rep-
resentation* of meaning, or levels of *logical form*, as levels or structures
that are the outcome of procedures of construction which are different
and separated with respect to the procedures of syntactic construction.
Levels of representation are the linguistic outcome of very high degrees
of unrestricted work of reconstruction: relations between rules, between
operations, and between categories and types are not constrained by
general conditions within the system of grammar.

If we attempt to classify forms of grammar in terms of conditions on compositionality they satisfy — the extreme cases being, respectively, the satisfaction of the strongest form of the principle of compositionality and the total absence of constraints upon the relations between rules, operations, and categories and types —, *linguistic* grammars of the generative tradition would lie far out on the one side, very near the extreme point where there are no constraints upon the relations between rules, while classical Montague Grammars would be placed not far away from the extreme point on the other side, as a rather *liberal* form is given to some of the conditions that jointly determine a *strong* form of the principle of compositionality.

The theory of language (or *Universal Grammar*) in classical Montague Grammar sets very strong conditions upon the relation between rules of syntax and rules of interpretation (or translation): for each rule of syntax, there must be one and only one rule of interpretation that — when applied to objects (expressions) associated with a type corresponding to the category of the expression upon which the syntactic rule applies (according to the correspondence between categories and types provided by the system of grammar) — builds up objects (expressions) of a type corresponding to the category of the constituent constructed by the syntactic rule.

Since grammar systematically and in full generality follows this procedure, relations between syntactic structure and interpretation are governed by a strong condition of compositionality: compositionality within the system of syntax, within the system of interpretation, and *parallel compositionality* with respect to the relation between these systems. Interpretation (or translation plus interpretation) is formally constructed by the set of conditions as the application of *rules* of interpretation (translation) upon *rules* of syntax, in order to have that a constituent be interpreted (translated) strictly in terms of the interpretations (translations) of its immediate constituents and of the mode of its syntactic construction. While correspondence between *rules* satisfies the strongest form of compositionality, the *general* correspondence between categories and types satisfies weakened conditions, as derived categories α/β are associated with types which are more complex than the *straight* ones $\langle \beta, \alpha \rangle$: types, in general, $\langle \langle \vartheta, \beta \rangle, \alpha \rangle$, where ϑ is a sort of free parameter of Universal Grammar to be given values by specific grammars.

Within this set of conditions, correspondence between *operations* occurring in rules of syntax and *operations* occurring in rules of interpretation is subjected to no *constraints*, except those determined by the correspondence between categories of expressions and logical types of their interpretations (translations), and by the condition of regularity, accord-

ing to which the same categories correspond to the same types.

Given the general form of rules in Montague's Universal Grammar, rules of specific grammars are the outcome of assignment of values to the following parameters: categories of the input expressions of the rules, category of the output expression, operation occurring in the syntactic rule, operation occurring in the semantic rule. The conditions set by the system of grammar upon the relation between categories and types determine in general which types are associated with the categories occurring in the rule. Within the very restricted space provided by the categorial structure, syntactic operations are not constrained any further and are allowed to perform concatenation (functional application) or complex transformational work. Within the severely restricted space provided by categorial structure, type structure, and the relation between categories and types, interpretive (translation) operations are not constrained any further, and are permitted to perform different kinds of interpretive works, and among that some limited amount of work of reconstruction. The system of grammar does not set any further constraints on the relation between operations of syntax and operations of interpretation, within the severe conditions determined by the correspondence between categories and types. In general, Universal Grammar does not determine whether relations between components of grammar should satisfy stronger or weaker conditions: in correspondence to relations between components for which Universal Grammar allows a variety of degrees of strength, there occurs in Universal Grammar a free parameter, and *types of grammar* are the outcome of assigning values to the free parameters. The following are among the free parameters occurring in Montague's Universal Grammar:

parameter of the relation between categories and types;
parameter of the operations of syntax;
parameter of the semantic operations;
parameter of the relation between operations of syntax and semantic operations.

Universal Grammar does not assign values to these parameters. Universal Grammar just sets general conditions that any abstract device generating languages and their interpretations should satisfy: each specific type of grammar (whether for a natural or for an artificial language) must satisfy — within Universal Grammar of classical Montague Grammar — a strong form of the compositionality principle (as concerns the general relation between rules of syntax and rules of interpretation). Within such a set of strong conditions, specific grammars can select different degrees of weakening with respect to the relations between *operations* of syntax and of interpretation, as they can select different kinds

of syntactic and interpretive operations. PTQ's Montague Grammar is a specific grammar determined by an assignment of values to the free parameters of Universal Grammar (values which are primarily chosen with the intention that the resulting specific grammar would accomodate intensionality in natural language and its relation to quantifiers scope differences).

'*Compositionality*' is ambiguous between the following different meanings:
  i. compositionality of the syntactic construction (sequences of rules);
  ii. compositionality of the interpretive construction (sequences of rules);
  iii. compositionality of interpretation with respect to syntax.

While conditions of compositionality within each system of construction separately are naturally governed in the system of grammar by conditions of syntactic wellformedness and of translation (or direct interpretation) wellformedness — and the formal system of grammar (Universal Grammar) does not allow for any weakening of these conditions —, compositionality in the sense of correspondence between constructions can be built up in a variety of ways, the range of ways being determined by the set of conditions governing the free parameters. Free parameters of Universal Grammar are at least the following:

  a. relation between *rules* of syntactic construction and of interpretive construction;

  b. relation between *operations* of syntactic construction and of interpretation;

  c. relation between syntactic *categories* and *types* of the interpretation (translation).

The minimal condition in order to have a compositional model theoretical interpretation (or translation plus interpretation) corresponding — in the sense, at least, of a one-to-one relation between rules — to syntactic construction could be roughly formulated as follows:

The structure of syntactic construction must partially determine the structure of interpretation, in the sense of determining the sequences of applications of interpretive *rules* in one-to-one correspondence to sequences of applications of syntactic *rules*. The correspondence is a one-to-one relation in order to have — for each application of syntactic rules generating a syntactic construction on the basis of its immediate constituents — a single rule of interpretation (translation plus interpretation) generating a composed interpretation (a set theoretical *object*, or a translation and its interpretation) from the interpretations (objects or translations) of the constituents.

Weakening this *rule-to-rule relation* would in general produce a collapse of strong compositionality and an outcome of partial non compositionality of interpretation *with respect to syntax*: the more grammar weakens the relation, the nearer it gets to a point where interpretation is operated upon a structure or separated level of *representation*, which is *not related in terms of construction* with respect to syntactic construction. Grammars that weaken this parameter permit interpretations (translations) to perform a wide and unconstrained (with respect to rule-to-rule relation) work of reconstruction.

Formal grammars satisfiyng a strong form of the relation between rules can diverge with respect to the conditions upon *operations*, since the form of rules of grammar makes it possible in general to distinguish between the rule and the operation occurring in the rule. The strongest form of compositional correspondence is satisfied by those grammars that set as a one-to-one relation even the relation between operations occurring in the rules of syntax and the operations occurring in the rules of interpretation. This parameter interacts with the parameter of the relation between categories and types, in the sense that the one-to-one correspondence between *operations* requires the strongest form of the relation between categories and types, that is, the straight relation that associates type $\langle \beta, \alpha \rangle$ to category α/β. When the system of grammar constructs the correspondence between categories and types according to the general pattern: $\alpha/\beta \Rightarrow \langle \langle \vartheta, \beta \rangle, \alpha \rangle$ (ϑ, a free parameter), the relation between operations satisfies a weakened form of compositionality, in the sense that to each syntactic operation there corresponds a composition of interpretive operations (for instance, the operations denoted by the formula α' ($^{\wedge}\beta'$) of the intermediate language). Weakenings of the relation between categories and types, and consequently of the relation between *operations* of syntax and *operations* of interpretation, still maintain the system of grammar within a strong form of the condition on compositionality. Grammars of this kind satisfy *general conditions of correspondence*, not just between rules, but also between operations; while the correspondence between rules is a one-to-one relation, the correspondence between operations is a one-to-many relation. Rules of interpretations can accomplish a limited amount of work of reconstruction, within general conditions satisfying a slightly weakened version of the strong condition on compositionality.

There are varieties of ways and varieties of degrees of complexity in which the operations of interpretation can differ from the operations occurring in syntactic constructions. Formal grammars belonging to the class of grammars satisfying a *minimal restriction of compositional correspondence* — that is, grammars that satisfy the condition of a one-to-

one relation between *rules* — might not impose any *general* restriction upon the relation between operations: in other words, these grammars might permit that the same syntactic operations, when occurring in different rules, translate into (or be interpreted as) different operations (respectively: of the intermediate language; of a semantic sort).

There are two more subcases:

a. Operations of syntax might differ from operations of interpretation in a variety of ways and degrees of complexity, but still within *general conditions* upon the relation between categories and types: the general conditions upon the relation determine that, as each input argument and each output element of a syntactic operation belong to one and only one category, so each input argument and each output element of the semantic operation belong to *the* type that the *general correspondence* between categories and types associates with the category.

b. Operations of syntax might differ from semantic operations in a variety of ways and degrees of complexity, and the output type of the semantic operation is *not* determined by the output category of the corresponding operation of syntax. Within this second sub-case, rules and operations of interpretation are allowed to accomplish a remarkable quantity of work of reconstruction, since syntactic rules and operations of the *same* sort (and upon the *same categories*) might, in the most unconstrained case, be translated or interpreted by rules and operations of different sorts (and of different types).

It is worth noticing that, even within these kinds of unconstrained formal grammars, there is one and only one (*unique*) translation or interpretation *for each rule* — with the consequence that the minimal requirement of parallel compositionality is being satisfied. Due to the relaxation of the constraints upon the correspondence between categories and types, translations or interpretations will accomplish a wide work of reconstruction, which will lead to partly reconstruct what might be called the missing *substructural* information that syntactic rules are unable to provide, and to take care of the systematic deficiency in *substructural* information of the syntactic rules. This sort of unconstrained grammar lies more or less near the boundary of strictly formal grammars, since the conditions on compositionality are weakly satisfied only by the relation between rules, while the relations between operations, and between categories and types, are largely unconstrained. Beyond these grammars, there lies the space where translations or interpretations become *logical forms*, as a separate level of logical linguistic representation: and where the minimal conditions of parallel compositionality are not satisfied any more.

There exists a ramified variety of types of grammars determined *by*

the parameters upon which the condition of compositional correspon-
dence is defined, and by the form in which relations are constructed with-
in each parameter. As natural language is very rich in *lexical descriptive*
apparatus, there is a variety of grammars, each of them *adequate*, ac-
cording to different ways of setting conditions of descriptive, formal
and explicative adequacy. A grammar is (weakly) *descriptively adequate*
if it generates all and only wellformed or grammatical phrases of the
language it constructs formally. A large and perhaps infinite number of
grammars satisfies this condition of descriptive adequacy. Those types
of grammar that satisfy the strongest set of conditions on compositional
correspondence between systems of rules *and* operations are the most
formally constrained ones; but, as natural language contains a very rich
lexical descriptive apparatus — and a consequent large variety of de-
scriptively based constructions — strongly constrained grammars (highly
evaluated from a strictly formal point of view) are bound to employ a
wide variety of different and unrelated rules and operations to describe
related linguistic processes. Grammars of this sort encounter systematic
difficulties to formally express any significant linguistic generalizations
of *a non general or structural kind*: generalizations, for instance, con-
cerning linguistic processes that occur below the categorial levels, cross-
categorial generalizations involving expressions belonging to different
syntactic categories.

   Grammars satisfying weaker conditions of compositional correspon-
dence — but still satisfying those conditions on compositionality that de-
termine the space of formally adequate grammars — are in general bet-
ter able to formally govern these sorts of systematic non structural lin-
guistic processes, and can be well evaluated in terms of *explicative* ade-
quacy: that is, in terms of *the degree of explicative adequacy they satisfy*
within a weaker, but still acceptable, satisfaction of formal adequacy.
The degree of divergence between formal and explicative adequacy
might be constructed as a possible criterion for classification and evalua-
tion of grammars.

REFERENCES

Ajdukiewicz, Kazimierz. 1935. "Die syntaktische Konnexität", *Studia Philosophica* 1. 1-27.

Bar-Hillel, Yehoshua. 1959. "Decision Procedures for Structure in Natural Language". *Logique et Analyse* 2. 19-29.

Barwise, Jon and Cooper, Robin. 1981. "Generalized Quantifiers and Natural Language". *Linguistics and Philosophy* 4. 159-220.

Carnap, Rudolf. 1956. *Meaning and Necessity.* Chicago: The University of Chicago Press.

Chomsky, Noam. 1956. "Three Models for the Description of Language". *I.R.E. Transactions of Information Theory* Vol. IT-2. 113-24.

——. 1965. *Aspects of the Theory of Syntax.* Cambridge. Mass.: The MIT Press.

——. 1977. *Essays on Form and Interpretation.* New York: North Holland/American Elsevier.

——. 1981. *Lectures on Government and Binding.* Dordrecht: Foris.

Cocchiarella, Nino. 1981. "Richard Montague and the Logical Analysis of Language". *Contemporary Philosophy. A New Survey.* 1. Ed. by Guttorm Fløistad, 113-54. The Hague: Martinus Nijhoff.

Cooper, Robin. 1978. "Montague's Theory of Translation and Transformational Syntax". *Meaning and Translation.* Ed. by Franz Guenthner & M. Guenthner-Reutter, 307-25. London: Duckworth.

——. 1979. "The Interpretation of Pronouns". Frank Heny & Helmut Schnelle eds. 1979. 61-92.

——. 1980. "Montague's Syntax". *Syntax and Semantics 13.* Ed. by Edith Moravcsik & Jessica Wirth, 19-44. New York: Academic Press.

——. 1982. "Binding in a Wholeweat Syntax". Pauline Jacobson & Geoffrey Pullum eds. 1982. 59-77.

Cooper, Robin & Parsons, Terence. 1976. "Montague Grammar, Generative Semantics, Interpretive Semantics". Barbara Partee ed. 1976. 311-62.

Curry, Haskell. 1961. "Some Logical Aspects of Grammatical Structure". *Structure of Language and its Mathematical Aspects.* Ed. by Roman Jakobson, 56-68. Providence: American Mathematical Society.

Davidson, Donald & Harman, Gilbert, eds. 1972. *Semantics of Natural Language.* Dordrecht: Reidel.

Davis, Steven & Mithun, Marianne, eds. 1979. *Linguistics, Philosophy, and Montague Grammar.* Austin: University of Texas Press.

Dowty, David. 1976. "Montague Grammar and the Lexical Decomposition of Causative Verbs". Barbara Partee ed. 1976. 201-45.

——. 1978. "Governed Transformations as Lexical Rules in a Montague Grammar". *Linguistic Inquiry* 9. 393-426.

——. 1982. "Grammatical Relations and Montague Grammar". Pauline Jacobson & Geoffrey Pullum eds. 1982. 79-130.

Gallin, Daniel. 1975. *Intensional Logic and Higher-Order Modal Logics*. Amsterdam: North Holland.

Gazdar, Gerald. 1982. "Phrase Structure Grammar". Pauline Jacobson & Geoffrey Pullum eds. 1982. 131-86.

Groenendijk, Jeroen, Janssen, Theo, & Stokhof, Martin, eds. 1981. *Formal Methods in the Study of Language*. I, II. Amsterdam: Mathematisch Centrum.

Hellan, Lars. 1977. "A Feature Based System of Grammatical Categories". $\overline{X}$ *Syntax, Categorial Syntax, and Logical Form*. Ed. by T. Fretheim & Lars Hellan. Papers from the Trondheim Syntax Symposium. 85-135. Trondheim: University of Trondheim.

Heny, Frank & Schnelle, Helmut, eds. 1979. *Syntax and Semantics 10*. New York: Academic Press.

Higginbotham, James. 1980. "Pronouns and Bound Variables". *Linguistic Inquiry* 11. 679-708.

——. 1983. "Logical Form, Binding, Nominals". *Linguistic Inquiry* 14. 395-420.

Janssen, Theo. 1976. "Compositionality and the Form of Rules in Montague Grammar". *Amsterdam Papers in Formal Grammar. II*. ed. by Jeroen Groenendijk & Martin Stokhof, 211-34. Amsterdam: Centrale Interfaculteit. Universiteit van Amsterdam.

——. 1980. "On Problems Concerning the Quantification Rules in Montague Grammar". *Time, Tense, and Quantifiers*. Ed. by Christian Rohrer, 113-34. Tubingen: Max Niemeyer Verlag.

——. 1981. "Compositional Semantics and Relative Clause Formation in Montague Grammar". Jeroen Groenendijk & Martin Stokhof eds. 1981. 237-76.

Jacobson, Pauline & Pullum, Geoffrey, eds. 1982. *The Nature of Syntactic Representation*. Dordrecht: Reidel.

Katz, Jerrold & Fodor, Jerry. 1963. "The Structure of a Semantic Theory". *Language* 39. 170-210.

Klein, Ewan & Sag, Ian. 1981. "Semantic Type and Control". Presented to the Annual Meeting of the Linguistic Society of America. New York. (Mimeographed). 1-25.

Kripke, Saul. 1963. "Semantical Considerations on Modal Logic". *Acta Philosophica Fennica* 16. 83-94.

May, Robert. 1977. *The Grammar of Quantification*. Doctoral Dissertation. MIT (Mimeographed).

——. 1981. "Movement and Binding". *Linguistic Inquiry* 12. 215-43.

——. 1983. *Logical Form as a Level of Linguistic Representation*. Bloomington: Indiana Univ. Linguistic Club (Mimeographed).

Montague, Richard. 1974. *Formal Philosophy*. Ed. by Richmond Thomason. New Haven: Yale Univ. Press. [PTQ="The Proper Treatment of Quantification in Ordinary English", pp. 247-70.]

Parsons, Terence. 1979. "Type Theory and Ordinary Language". Steven Davis & Marianne Mithun eds. 1979. 127-51.

Partee, Barbara. 1975. "Montague Grammar and Transformational Grammar". *Linguistic Inquiry* 6. 202-300.

——. 1979. "Montague Grammar and the Wellformedness Constraint". Frank Heny & Helmut Schnelle eds. 1979. 275-313.

——. ed. 1976. *Montague Grammar*. New York: Academic Press.

Putnam, Hilary. 1975. "The Meaning of 'Meaning'". Hilary Putnam. *Mind, Language, and Reason*. II, 215-71. Cambridge: Cambridge Univ. Press.

Rodman, Robert ed. 1972. *Papers in Montague Grammar*. UCLA (Mimeographed).

Tarski, Alfred. 1936. "Der Wahrheitsbegriff in den formalisierten Sprachen". *Studia Philosophica* 1. 261-405.

Thomason, Richmond. 1974. "Introduction". Richard Montague. 1974. 1-69.

——. 1976. "Some Extensions of Montague Grammar". Barbara Partee ed. 1976. 77-117.

——. 1976. *On the Semantic Interpretation of the Thomason 1972 Fragment*. (Mimeographed). 1-74.

Williams, Edwin. 1977. "Discourse and Logical Form". *Linguistic Inquiry* 8. 101-39.

——. 1980. "Predication". *Linguistic Inquiry* 11. 203-38.

——. 1981. "Argument Structure and Morphology". *Linguistic Review* 1. 81-114.

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